NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

FY 2002 OPERATIONAL INFORMATION TECHNOLOGY PLAN

Office of the Chief Information Officer

October 2001

TABLE OF CONTENTS

Section 1. Description of IT Organization and Management Processes

1.1 Description of IT Management Organization and Compliance with Department Directive on IT Restructuring

NOAA's plan for restructuring its management of information technology has eight parts, an overall NOAA CIO plan and plans for each of the seven NOAA Line Offices. As directed by the Department, NOAA is establishing an Office of the Chief Information Officer and High Performance Computing and Communications. NOAA has already realigned key functions into the NOAA Information Resources Management Office (NIRMO) with the CIO and Deputy CIO leading the Office. The Reorganization Plan finalizing the consolidation of the Office of HPCC and NIRMO into the Office of the Chief Information Officer is pending approval.

The functional statement for the NOAA CIO Office is:

> The Office of the Chief Information Officer and High Performance Computing and Communications (CIO/HPCC) implements the provisions of the Clinger-Cohen Act of 1996, the Paperwork Reduction Act, and other directives regarding the acquisition, management, and use of information technology (IT) resources. The Office leads the improvement of NOAA operations and service delivery using IT systems, and promotes NOAA's effective use of IT to accomplish its mission. The Office leads NOAA's principal IT research through the NOAA High Performance Computing and Communications (HPCC) Program, provides advice to NOAA management on information resources and information systems management, promotes and shapes an effective strategic and operational IT planning process for NOAA, coordinates the preparation of NOAA's IT budget and associated materials, oversees selected NOAA-wide operational IT systems and services, and is responsible for other assigned programs that are interagency and/or international in scope.

All NOAA IT not included in the above structure is under the oversight of a NOAA Line Office (L.O.) CIO. These CIO's have half of their performance evaluated in consultation with the NOAA CIO. NOAA believes that the L.O. restructuring plans comply with all of the requirements in the Secretary's restructuring memorandum.

NOAA has a NOAA CIO Council through which the NOAA CIO and the L.O. CIOs coordinate oversight of NOAA IT. NOAA has established the NOAA IT Review Board, which reviews and evaluates all IT-intensive initiatives being proposed for inclusion in NOAA's annual budget request. The NOAA IT Review Board is chaired by the NOAA CIO and consists of all NOAA CIOs, the NOAA CFO/CAO, and any other members that the NOAA Deputy Under Secretary chooses to appoint. NOAA CIOs are also active participants in the NOAA Strategic Planning Teams, through which these initiatives are prepared. The CIO, as chair of the NOAA IT Review

Board, provides formal input to the Under Secretary, the Assistant Secretary, and the Deputy Under Secretary before they make final NOAA budget decisions.

The NOAA CIO reviews and approves all major NOAA IT acquisitions with the advice of the NITRB, and receives regular reports and/or briefings on the progress of approved acquisitions. The briefings address cost, schedule, milestones, and other performance measures.

1.2 Description of NOAA Investment Management Process

As stated above, NOAA has established the NOAA IT Review Board, which reviews and evaluates all IT-intensive initiatives being proposed for inclusion in NOAA's annual budget request. The NOAA IT Review Board is chaired by the NOAA CIO and consists of all NOAA CIOs, the NOAA CFO/CAO, and any other members that the NOAA Deputy Under Secretary chooses to appoint. NOAA CIOs are also active participants in the NOAA Strategic Planning Teams, through which these initiatives are prepared. The CIO, as chair of the NOAA IT Review Board, provides formal input to the Under Secretary, the Assistant Secretary, and the Deputy Under Secretary before they make final NOAA budget decisions.

The NOAA CIO reviews and approves all major NOAA IT acquisitions with the advice of the NITRB, and receives regular reports and/or briefings on the progress of approved acquisitions. The briefings address cost, schedule, milestones, and other performance measures.

As individually described in their CIO restructuring plans, each NOAA Line Office has an internal investment review process that calls for the CIO to review and approve significant IT investments. Typically these reviews include involvement by senior IT managers from within the Line Office.

Investments below $2.5M can be reviewed and approved internally by the Line Office. Investments above that threshold are further reviewed by the NITRB and either approved by the NOAA CIO or, if it exceeds the current approval threshold ($10M for NWS and NESDIS, $2.5 M for NMFS, NOS, and OAR), it is sent to the DOC CIO's office for approval.

1.3 Overview of NOAA's Current and Planned IT Architecture

The NOAA IT Architecture is a Federated Architecture and is comprised of six segments and five technology domains. Each of NOAA's Line Offices comprises one of the six following segments:

- National Environmental Satellite, Data & Information Service
- National Marine Fisheries Service
- National Ocean Service
- National Weather Service
- NOAA Research
- Office of Marine and Aviation Operations.

The NOAA technology domains are listed below:

- Administrative Systems
- Archiving and Access
- High Performance Computing
- IT Security
- Messaging
- Shared Networking and Telecommunications.

At the NOAA-level the architecture deals with a common set of architecture standards and IT Principles, and provides the specific architecture for certain cross-cutting technology domains. NOAA's Line Offices have developed architectures for their specific business processes. These architectures are designated as architectural segments of NOAA's Enterprise IT Architecture. This enables the Line Offices to accommodate their diversity and uniqueness, while providing for necessary interoperability across NOAA.

The NOAA IT Architecture, including all of its IT Domains and Line Office Segments, can be found on the Internet at: http://www.hpcc.noaa.gov/noaaita/. Please send e-mail to ira.m.grossman@noaa.gov to obtain necessary information to access the referenced URL.

The NOAA IT Architecture is a seven-step Principals and Standards Architecture process that considers four IT Architectural Views: Business Process, Data/Information, Applications and Technology Infrastructure (networking, telecommunications and platforms). The seven steps of the Department of Commerce IT Architecture Process are: (1) Define Vision, Objectives and Principles; (2) Characterize Baseline; (3) Develop Target Architecture; (4) Conduct Gap Analysis; (5) Develop Migration Options; (6) Implement; and (7) Continuously Review and Update IT Architecture.

At the NOAA-level, the IT Architectural Principles that apply are given below:

META PRINCIPLES:

M.1. IT Decisions Will Be Driven by Total Business Worth to NOAA.

M.2. NOAA will make use of vendor-neutral (e.g., TCP/IP) and vendor-specific (e.g., Microsoft Windows) standards, where practical, to develop interoperable and open systems.

M.3. Security is essential and appropriate security will be provided for NOAA networks, servers, computers, and data/information.

M.4. Electronic Accessibility of Services and Products will be provided in accordance with Federal law for persons with disabilities.

M.5. Training is essential to retain personnel, and to make effective use of IT systems and resources NOAA will attempt to coordinate the provision of state-of-the-art training anytime and anywhere through the use of Internet and other electronic means.

M.6. The IT Architecture will be regularly updated to reflect changes in strategic goals, business needs, and technology.

BUSINESS PROCESS PRINCIPLES (NOAA's Mission)

B.1. Accomplishment of NOAA's mission is critically dependent on a sound IT infrastructure.

B.2. Business Processes will be optimized through appropriate use of digital workflow technologies.

B.3. Appropriate Access to resources will be provided independently of location or organization.

B.4. Partnerships with constituents and collaborators in academia, industry and other agencies will be fostered and encouraged.

DATA PRINCIPLES

D.1. Data Is a Corporate Resource and will be managed effectively and efficiently, made available, and archived in accordance with Federal Regulations.

D.2. Metadata will be developed and maintained.

D.3. Data will be entered and captured only once.

D.4. Data will be kept Separate from Applications.

D.5. Data will be Online to the extent feasible and appropriate.

APPLICATION PRINCIPLES

A.1. User requirements will drive application development.

A.2. Process Re-engineering or Simplification will be evaluated before buying or developing applications for a process.

A.3. Off-the-Shelf Software will be used in preference to home-grown solutions when it can meet requirements.

A.4. Application development will use proven software engineering methodologies to develop, re-engineer, maintain and implement applications.

A.5. Security, networking, scalability, modularity and platform independence will be critical design elements.

A.6. Documentation of all applications will be provided and maintained.

TECHNOLOGY PRINCIPLES

T.1. NOAA will provide a common network environment with adequate bandwidth, using a standard set of protocols, to support NOAA's network services.

T.2. The Internet/Web will be a key element in acquiring, transmitting, and sharing NOAA data and information. NOAA seeks standard and easier ways to access increasingly complex technologies and information.

T.3. Messaging is critical to NOAA=s day-to-day business operations and must be reliable, accessible, secure, must provide electronic forms for collaboration, and must provide a robust corporate directory.

T.4. Technologies will be chosen to enhance mission capabilities, to improve customer service, and to support scalability, portability, operability, compatibility and evolutionary changes.

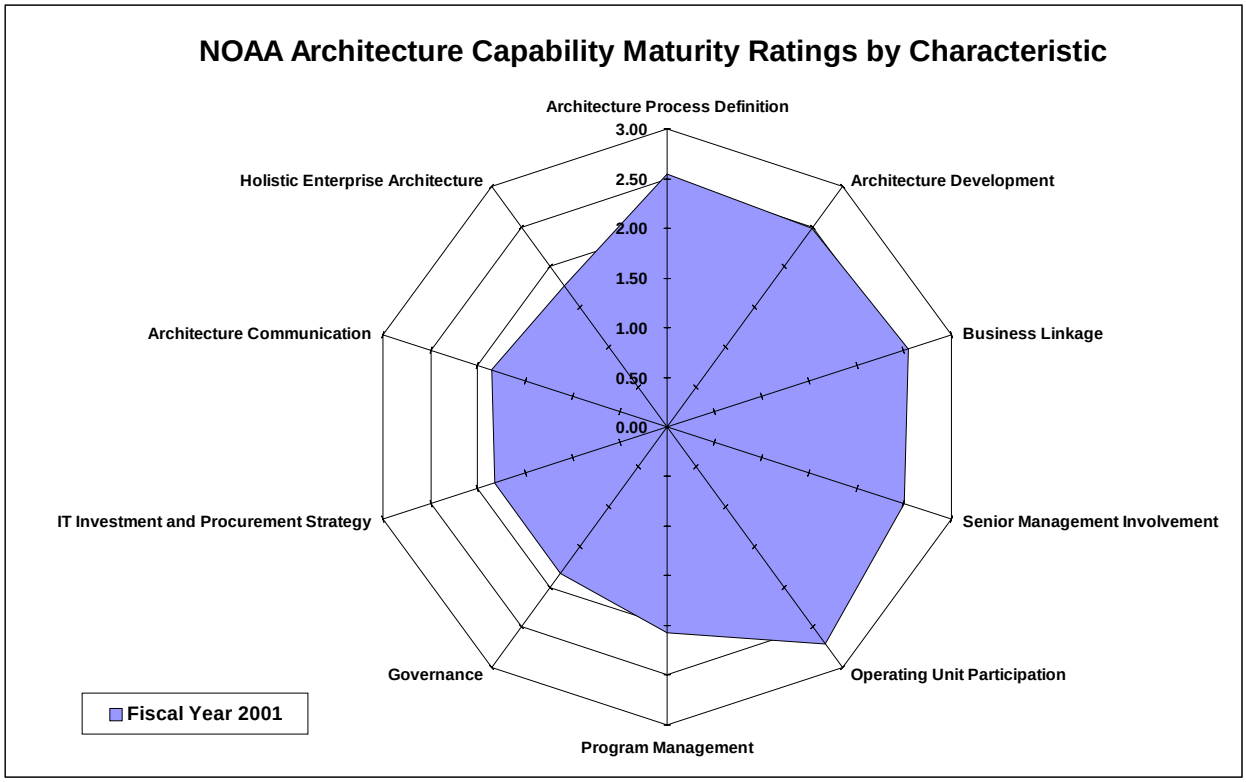
T.5. Emerging technologies will be evaluated in pilot projects before using them in critical and/or operational systems**.** Technologies may be adopted if proven effective and efficient in pilot demonstrations.

T.6. High Performance Computing will be used to meet NOAA's requirements for increased high-end computing resources for higher resolution models and for improved representation of the physics, chemistry, and biology of environmental systems, and to help manage and process the rapidly increasing amounts of data available and necessary to run the models.

The Department of Commerce IT Architecture Capability Maturity Model was used to assess the overall NOAA-Wide IT Architecture Capability Maturity. NOAA's Enterprise Architecture self-assessment shows that the NOAA-wide IT Architecture Capability Maturity to be at Level 2.15, with Level Zero being the least mature and Level Five being the most mature. The Figure below shows the results of the NOAA- wide self-assessment in the form of a radar graph.

The self-assessment indicates that NOAA is most mature in the early phases of the IT Architecture Process and is least mature in the later stages of the process. Analysis of the assessment rankings reflects NOAA's maturity int the development of the IT Architecture process, the Architecture linking to NOAA's business, the early involvement and acceptance of the process by NOAA's IT senior management, and the participation of the Line Offices in the Architecture process. As NOAA continues to gain experience with the IT Architecture process, NOAA needs to strengthen its IT Architecture Governance structure, to better integrate the IT Architecture process with NOAA's IT Investment and Procurement Strategy and to better communicate the IT Architecture and its process to all levels of NOAA. Finally, the analysis

indicates that the last IT Architecture characteristic question was not well understood and needs to be rewritten by the Department's IT Architecture Affinity Group before it can be meaningfully used for evaluation.



1.4 Description of How NOAA is Improving IT

Office of Chief Information Officer and High Performance Computing and Communications

The NOAA CIO Office is responsible for improving the management of IT on a NOAA-wide basis. The office has both policy and operational responsibilities that cross Line Office boundaries. Objectives for the NOAA CIO office include:

- Improve NOAA's IT planning and budgeting through streamlined, focused IT strategic and operational planning tightly coupled to NOAA's seven strategic elements and Line Office operational plans. OCIO/HPCC activities support all NOAA Strategic Program elements, offices and lines

- Enable the comprehensive management of NOAA's IT resources through the development, implementation, and renewal of the NOAA-wide IT architecture including maintaining a baseline of NOAA Web servers.

- Oversee the implementation of the Section 508 accessibility across NOAA to provide a wide range of smart IT procurement options to NOAA to enhance cost savings and ease routine procurements.

- Develop and manage NOAA's common network and telecommunications-based infrastructure, including network-enabled enterprise applications such as electronic mail and Web broadcasts with increasing cost-effectiveness while maintaining highly reliable, robust service.

- Provide IT security for NOAA information and resources through improved policy, procedures, training, technology solutions, and personnel.

National Environmental Satellite, Data, and Information Service

The National Environmental Satellite, Data, and Information Service (NESDIS) has restructured its Information Technology Management organization in compliance with the Department's directive on IT restructuring by establishing a Chief Information Officer and the CIO's Office. Under this restructuring, the CIO reports directly to the NESDIS Deputy Assistant Administrator for Satellites. The CIO's Office has formed two new oversight bodies under its direction, the Information Management Council (IMC) and the IT Technology Architecture Team (ITAT).

The IMC acts as the NESDIS Information Technology (IT) Review Board and is the forum for the exchange of ideas on cross-organizational programs and for the discussion of systems management policy and subsequent implementation. The IMC will also address matters relating to the NESDIS business processes, as well as ensuring coordination and consistency with DOC and NOAA policy and guidelines. The Chair is the CIO, who coordinates all pertinent policy and guidelines and recommendations with the DOC CIO, NOAA CIO, and other Line Office CIOs. The IMC also relies upon the IT Architecture Team (ITAT) to formulate and maintain the NESDIS architecture and to recommend IT policies, guidelines and standards. The IMC makes decisions on the recommendations and proposals of the ITAT. The IMC chairperson makes the consensus and view of the IMC known to the Deputy Assistant Administrator (DAA) and the Assistant Administrator (AA), and takes them into account in carrying out the CIO's responsibilities under the Information Technology Act.

The CIO approves all IT plans within NESDIS and is involved in the organization's IT life-cycle planning effort. The life-cycle planning effort is coordinated with the CIO and is vetted through the Board of Directors during the formulation phase and prior to the execution year. The resulting five-year planning document includes all elements/domains of the IT architecture.

The following NESDIS systems are being replaced or improved:

- The Nation Climatic Data Center (NCDC) will install the SMS Storage Area Network (SAN). This CLASS-funded device will have an initial 6.3 terabytes capacity and a fibre channel interface. The SAN is scaleable and flexible in design. It will support all of NCDC's current and near-term operating systems.

The storage will be managed with a GUI interface. With the use of the fibre channel, which provides a hot loop, components can be added while the SAN remains on-line. The SAN will also reduce network traffic and support data transfer speeds up to 100MB a second. The new IBM M80 processor and the new Winterhawk II nodes as well as many other NCDC critical processes will utilize the SAN.

- The addition of the IBM Linear Tape Open Library will allow the archive of 100GB of data per tape. The future growth is projected to over 800GB of data per tape. The NCDC projection is for a new cabinet to be added each year, for the next three years, to accommodate the GOES Active Archive.

- The NCDC continues to work with local initiatives that focus on bringing high-speed communication lines to Western North Carolina. These initiatives are in their infancy, and are not expected to be available this year. The NCDC will actively work to support such local initiatives.

- GOES Backup – NESDIS is exploring the feasibility of establishing a second backup command facility, in addition to the new one at NASA, Goddard Spaceflight Center (GSFC) in Greenbelt, Maryland, the Wallops Backup (WBU) facility. Since the WBU has the capability to command only one GOES spacecraft at a time, this would allow two to be commanded simultaneously in the event that the Wallops Command and Data Acquisition Station (WCDA) at Wallops Island, Virginia, was unavailable due to a natural disaster or catastrophic failure.

  The most advantageous site for this second backup site appears to be the Fairbanks Command and Data Acquisition Station (FCDA) in Fairbanks, Alaska. This station currently supports the polar-orbiting spacecraft under NOAA's control.

- Move to ORACLE RDBMS – Currently the National Oceanographic Data Center (NODC) manages most of its data bases using SYBASE data base management software. In order to participate in reaching a standard across the NOAA National Data Centers, NODC plans to converge their DBMS usage into single environment. In FY 2002, NODC will move many of its operational data bases to ORACLE.

- IJPS Support – NODC will continue to develop plans for archiving ocean measurements from NOAA's POES and the European Union's MetOp satellites. The Initial Joint Polar-Orbiting Operational Satellite System (IJPS) Concept of Operations document that was completed in FY 2001 by NODC and NCDC will be used as the basis for outlining more detailed plans for the future IJPS archive at NODC.

- CoRIS Development Support – In support of NOAA's Coral Reef Data & Information System (CoRIS), NODC will develop facilities and procedures for an archive of coral reef data. The archive will take into account the fact that coral reef data sets are highly variable in content, complexity, and volume. For example, diver surveys are low volume but high in complexity. At the other extreme, video recordings are low in complexity, but very high in volume. The archive will serve as a repository for data created by NOAA grants for coral reef monitoring and research.

- Decommissioning of Optical Disk System – Systems to replace the NODC optical disk jukebox system with a large capacity (Terabyte) RAID disk system have been procured. This will enable NODC to replace an expensive-to-maintain, outdated optical disk jukebox system with a modern and more reliable technology that has the added benefit of providing access services with orders of magnitude of improvement. The replacement RAID system will offer a high degree of fault tolerance and will enable vastly more efficiency in managing backup and recovery services to maintain a high level of system availability.

National Marine Fisheries Service

NOAA Fisheries understands the importance of effective communications –the open and honest exchange of information among fellow workers. As such, NOAA Fisheries uses a number of agency advisory boards consisting of both IT and non-IT personnel on a regular basis to address issues pertinent to IT management and operations. The Deputy Assistant Administrator for Management and Operations created an additional body of senior-level advisors, the Deputy Council, of which the CIO is a co-chair. This Council in conjunction with existing advisory boards, allows NOAA Fisheries to take a more collaborative approach to IT management, explaining our IT management issues better, and more actively involving employees in the management process earlier. In this way, NOAA Fisheries can build support for its IT management measures and strengthen our overall operations.

Another important step NOAA Fisheries will take to improve IT management is to enhance our information systems. NOAA Fisheries will ensure that employees, including field staff, have access to the most up-to-date computer and telecommunications capabilities and training commensurate with their job responsibilities, and that the best technical support services are provided for NOAA Fisheries major information systems. Some of the NOAA Fisheries information systems that will be improved or developed are:

- Financial Reporting System (FRS) – FRS provides an automated system for collecting, storing, and retrieving information concerning the financial activities of the Financial Management Centers (FMC's) of NOAA Fisheries. NOAA Fisheries financial information enters the FRS system through various sources, where it is processed and stored. Management, program leaders, and administrative personnel then retrieve this information in the form of reports for analysis. FRS provides two important features, i.e. commitment tracking and the

production of reports tailored to management requirements. These two features are essential for tracking financial accountability and will greatly support and enhance the transition to CAMS.

- Fisheries Information System – Section 401 of the Magnuson-Stevens Act required the Secretary of Commerce to submit a proposal to Congress for implementation of a National fishing vessel registration and fisheries information system. In a December 1998 Report to Congress, NOAA Fisheries outlined a proposal for a cooperative effort between NOAA Fisheries, the Atlantic, Gulf, and Pacific States Marine Fisheries Commissions, the states, Regional Fishery Management Councils and the recreational and commercial fishing industries over a multi-year period. The proposal would fill critical information gaps through initiation of new data collection programs that will subsequently reduce the risk and uncertainty of living marine resource policy decisions. The proposed system would also improve the accuracy and effectiveness of existing data collection programs by establishing common data collection, information technology, and quality standards for regional programs. All resulting data would be integrated into a harmonized, Web-enabled information system. The proposal included research and application of electronic data collection technologies that would reduce the burden on those that submit data. By coordinating the techniques used to gather and disseminate data on a nation wide basis, the collaborative program would efficiently bring into balance the demands for timely and credible data with the need to thoroughly evaluate, choose, and monitor state and federal public resource management policies.

- National Permits One-Stop Shopping – Pursuant to directives from the Assistant Administrator for Fisheries and GPEA, NOAA Fisheries is committed to, where feasible, "one-stop shopping" in its fisheries permits processes. The objective is to offer commercial and recreational fishermen, and other holders of agency-issued permits, user-friendly and convenient electronic (Website) mechanisms for obtaining and renewing many or all needed permits and licenses through one on-line source.

- Vessel Monitoring System (VMS) – NOAA's Special Agents and Fisheries management officials are leveraging high-tech tools to assist them in their work. One of these tools is VMS. VMS routinely uses satellite-based monitoring systems to monitor compliance with domestic and international fishing regulations as well as receive real-time catch data. The system is used to provide infrastructure, economies of scale, and coordination across NOAA Fisheries regions and offices, ensuring standards-based consistency for enacting national policies concerning fishing data confidentiality, systems security, and legal evidence handling.

National Ocean Service

NOS has established the following to improve IT management:

- Information Technology Review Board – Modeled on the NOS Business Operations Council, the Information Technology Review Board (ITRB) is made up of all NOS program and staff office Deputies. The ITRB reviews upcoming IT initiatives, IT operational plans for the current year, and performs quarterly reviews of spending and progress.

- IT Worker management – Per direction from DOC Secretary, a new element promoting teamwork, cooperation and policy compliance will be added to all IT workers' performance plans. This element will give managers the tool they need to ensure that Federal, DOC, NOAA, and NOS IT policies are being followed.

All IT planning in NOS is driven by the IT Architecture process lead by the NOS IT Architect. NOS has a common set of IT Principles that express the ideals that guides all IT work. The IT Architecture Baseline serves from year to year as description of our technical environment and a yardstick of progress toward the continuously advancing NOS IT Target Architecture. The Baseline is reviewed and updated annually, with consideration given to the work flow, data flow, application, and infrastructure layers on a corporate and program level. NOS corporate Target Architectures are developed for Spatial Data, Internet, and Technology (networks, messaging, general computing) in addition to program-specific Targets from each NOS office. Using the baseline and the target, NOS creates a migration plan with details and milestone dates. This migration plan becomes the office IT spending plan for the operational year. The NOS IT Review Board reviews the IT budget of all NOS offices, and the corporate IT initiatives.

Each office prepares input for the NOS Annual Operating Plan and each new initiative includes a section describing the IT required. Requiring an IT section forces the planners to consider the IT component of initiatives that, on the surface, might not seem to be technical.

National Weather Service

The NWS has taken the following steps to improve IT management:

- Established an IT Governance Board of senior level NWS managers (known within NWS as the "CIO Posse"). The Posse interfaces to the NWS Corporate Board through the CIO's membership on the Corporate Board and committees. The Posse assists the CIO with the overall responsibility of managing and coordinating the approved changes to the NWS Systems Architecture and the enforcement of IT standards and policies.

- Established an implementation plan for the initial NWS Enterprise Network and update the Telecommunications Strategic Plan to include new technology such as

voice over IP and enhance the NWSNet to include observation and dissemination telecommunications systems.

- Developed and published Web accessibility guidelines for all NWS Web masters in accordance with Section 508 of the Rehabilitation Act.

- Established through the NWS Corporate Board, CIO review and approval of IT and IT intensive projects within the NWS Financial Management Centers.

- Completed Security accreditation for 85% of the NWS Systems. The remaining 15% will be completed in FY 2002. After the initial accreditation is completed, the NWS will begin a cycle of re-certification and review for re-accreditation which is required to be done every three years.

Office of Marine and Aviation Operations

The Office of Marine and Aviation Operations (OMAO) has taken steps to improve IT management in the following areas:

- IT Restructuring – At OMAO Headquarters, Silver Spring, MD, the OMAO CIO reports to the Deputy Director, OMAO. The OMAO CIO provides direction and guidance to each OMAO Center's MIS Coordinators across the nation. The OMAO CIO and the Centers' MIS Coordinators have collateral duties of IT Security Officer, IRM Plans/Reports/Studies, user help and system hardware, and software support. In accordance with the NOAA IT Restructuring Plan, the OMAO CIO also reports to the NOAA CIO. The OMAO CIO is a member of the senior management team. The supervisor will evaluate the CIO's performance in consultation with the NOAA CIO. The OMAO CIO will officially represent the OMAO's IT activities and interests in interactions with NOAA and other organizations outside OMAO.

- IT Investment Management Process – All OMAO IT investments are part of greater OMAO programs and projects. OMAO programs and projects follow routine program procedures for identification of requirements, identification and selection of alternatives, implementation management, and evaluation. OMAO has the goals for FY 2002 of a Capability Maturity Model Level 3 for IT planning, investment review, and security.

- Evaluations – Employees of OMAO who perform IT work will have an element in their performance plan that evaluates their improvement in the way their IT work is performed. This element will be established and evaluated by the employee's direct supervisor and the most senior IT manager for those personnel.

Office of Oceanic and Atmospheric Research

The OAR has taken the following steps to improve IT management:

- The CIO Office, a virtual organization, as proposed, will be responsible for oversight and coordination of all aspects of information technology management OAR-wide. This oversight and coordination includes IT planning, investment management, IT security, IT architecture, and policy development. This Office is the link and the information conduit between DOC, NOAA, and the OAR Laboratories and Program Offices.

  The CIO's Silver Spring staff represents OAR with participation in NOAA-wide meetings, working groups and committees, for example the Architecture Working Group, the NOAA Security Office, the Messaging Operations Center, Network Operations Center, etc. The staff also handles data calls and information dissemination, drafts policy, and works with NOAA's CIO Office on enterprise software procurements, BPA's, and IT training. The CIO is also responsible for the OAR Headquarters' Information Management Division (IMD), which provides computer services to more than 125 OAR staff members. Because of the geographical distribution of OAR's organizational units, the CIO manages her responsibilities through her Senior IT Managers by evaluating a performance element in their Annual Performance Plans.

- OAR IT Board – The IT Board was established in October, 2000, to review proposed IT capital investments and to serve as an advisory body to the CIO in the planning and implementation of OAR wide IT information management policy. The Board is chaired by the CIO, and is composed of three Senior IT Managers and four members appointed by the CIO to ensure that the Board reflects the diversity and complexity of OAR's mission. The Board meets at least once a year, and also convenes on an ad hoc basis. Appointment to the Board is for two years.

- Each research lab and the Office of Global Programs have designated Senior IT Managers, most of whom report directly to their respective Directors. Beginning in FY 2002, each Senior Manager will include a critical IT management element in his or her performance plan which will be evaluated jointly by the Sr. Manager's supervisor and the CIO. The Senior IT Managers will have the oversight responsibility for centralized IT activities, including strategic planning, IT operations and IT security. Many of the Senior IT managers have historically been very active participants in NOAA-wide IT programs, including High Performance Computing and Communication, and the Environmental Services Data and Information Management (ESDIM) Program.

- OAR Centers of Excellence – To fully utilize existing talent and expertise in the field, the CIO has identified "centers of excellence" in different Labs to leverage their unique strengths. For example, the Pacific Marine Environmental Lab was selected to develop OAR-wide administrative systems because of its experience and skill in this area. Similarly, the National Severe Storms Laboratory was asked to design and support OAR's Internet Website, and the Geophysical Fluid Dynamics Laboratory and the Forecast Systems Laboratory are OAR centers of excellence in high-performance computing.

- Technical Committee for Computing Resources (TCCR) – The TCCR is a grass roots organization that was formed more than eleven years ago. This group is highly technically oriented, and is composed of senior technical personnel from each Laboratory and the Office of Global Programs. The group works together to solve mutual problems, identify best practices, share new technology information, and assist with advice and ideas for individual Laboratory problems and issues. The Chair of the group is elected by the TCCR biannually and it rotates across the Laboratories.

Office of Finance and Administration

The management of IT within the Office of Finance and Administration (OFA) has been in a state of transition over the past year. The Information Systems Office was split with part of the staff being transferred to form the NOAA CIO Office, with the remaining staff forming the OFA CIO office. There have also been several leadership changes preceded by the uncertainties inherent in this kind of transition. A new CIO has been selected and has reported for duty. Under her leadership significant IT management improvements are expected.

1.5 NOAA Compliance with the Departmental IT Security Program Requirements

In August, 2001, NOAA issued an "Annual IT Security Program Review" report and a report on the implementation of the Government Information Security Reform Act (GISRA) in NOAA. Copies of the review report and the executive summary to the GISRA report are included as appendices to this plan.

1.6 Brief Summary of FY 2001 Accomplishments

Accomplishments for the past year are provided for the NOAA OCIO and each of the Line Offices.

Office of the Chief Information Officer

- The NOAA OCIO reorganization was planned and will become final once the required signatures are obtained. An interim restructuring was implemented to

split the staff of the former Information Systems Office within the Office of Finance and Administration (OFA) to report to the NOAA CIO for enterprise-wide issues and the remaining staff to an OFA CIO for support of OFA.

- As part of the reorganization, the staff moved to new facilities. The facilities for the Network Operations Center (NOC), the Messaging Operations Center (MOC), and the Computer Incident Response Team (CIRT) were significantly upgraded.

- A Memorandum of Agreement was signed with the Department of Transportation establishing an enterprise-wide electronic or on-line learning (E-learning) program for NOAA. The initial implementation will be for OFA and NESDIS. Once the system is working smoothly other Line Offices will be invited to participate.

- Over 4,500 surplus PCs and other associated equipment were obtained from the Census Bureau and distributed throughout NOAA.

- NOAA IT Security Program:

  - Developed Certification/Accreditation Plans for NOAA systems.
  - Developed a training program for systems administrators and trained 35% as of August.
  - Completed three security site reviews.

- Developed an automated system for the acquisition and management of telecommunication services.

- Completed the non-NWS transition from FTS 2000 to FTS 2001.

- Completed the implementation of a standard NOAA Enterprise Messaging System (NEMS) except for NOAA ships, where implementation will be completed in 2002.

- Established a program to implement Section 508 of the Rehabilitation Act and held several events to educate NOAA staff about the implementation of the new standards. Section 508 information was included as part of on-line training for purchase card holders. A Web site is also operational.

- Efforts continued to streamline the acquisition of IT products and services. Blanket Purchase Agreements were established for Adobe, Macromedia, and WinZip software. A one-day training session was held on the Adobe software.

National Environmental Satellite, Data, and Information Service

NESDIS accomplishments include the following:

- The Satellite Active Archive (SAA) has seen a 150% increase in on-line access and a 200% increase in the distribution of satellite data. Data base access has increased in proportion as well. The SAA completed reprocessing NOAA-14 AVHRR (1995 - current) for the Pathfinder project.

- The NOAA National Data Center (NNDC) project brought the three Data Centers into close alignment for the availability and presentation of environmental data. A common order, access, and delivery system enables users to quickly conduct business without regard to physical data set location or occasional interruption of specific hardware outages. A baseline IT architecture has been established for the system and for each data center cluster which is in use in order to baseline future expansion of IT systems.

- Customer Support Services – IT support has been significantly improved through the use of Web-based Help Desk, Info Desk, and Automated System Access Request systems. These readily-available tools have improved response time for problem resolution, reduced security risks from inactive accounts, and made available specific IT information to end users. For example, over 5,000 requests were made through Help Desk this past year and over 90% of all requests for support were completed and closed out within 24 hours

- National Virtual Data System (NVDS) – NVDS was declared operational and the NCDC increased the number of data sets and number of data products available through NVDS. A team from the Customer Service Division and the Systems Branch participated in the design and planning for enhancements to the current Customer Order Management Processing System and a replacement system.

- As the Climate Database Modernization Program (CDMP) concluded its second year of existence in 2001, many tasks came to fruition. Access to images of climatological records improved when new Web services were upgraded by the West Virginia contractor. WSSRD, as it is known, now contains over 1.5TBs of images and their associated indices. Twenty different form types are currently housed within WSSRD and indices number over 20 million. Direct linkages from NCDC's main Web system, Climate Data On-line, have been completed, giving the user the ability to identify the images required, place an order, and immediately have the images available.

- Section 508 Compliance – NESDIS, already experienced with implementing IT interface facilities for a visually impaired employee, quickly achieved full compliance with Section 508 requirements in the redevelopment of its Web page

displays. The NESDIS is now developing monitoring tools and methods to evaluate this compliance requirement.

- Adobe ACROBAT for Platform-neutral Documents – NESDIS installed Acrobat across NESDIS and NOAA Central Library to create universally readable, platform-neutral documents, greatly enhancing the information distribution capabilities.

- Netscape Enterprise E-mail and Calendar Implementation – NESDIS E-mail services were switched to the NOAA-licensed Netscape Enterprise Messaging System (NEMS). NEMS gives users greater flexibility and convenience, administrators simpler control and management, and NESDIS superior integration with NOAA E-mail, directory, and organizational services. This system also supports E-mail access over the Internet, enabling staff to access information while off-site. Expanded implementation of Netscape Calendar to enable enterprise coordination and scheduling among more users at NESDIS.

- Augmented the library system to include: a Web-accessible library catalog that links to full text NOAA documents and to the Data Rescue Project's images; campus-wide desktop access to research-oriented data bases, electronic indices, and journals; a Web-accessible photo library collection; and a Web product with links to related Web sites. In addition, the library system hosts one national and two international Web pages. By definition, these types of services are never completed, but always under development and revision.

- On-line Access/Web services – The library expanded access to electronic journals and documents to the Silver Spring, Miami, and Seattle campuses. Expanded access to NOAA documents to the Web.

National Marine Fisheries Service

NMFS IT accomplishments for FY 2001 include the following.

- Wide-Area-Network – NOAA Fisheries increased the scope and improved the performance of its Wide-Area-Network. We moved from the FTS 2000 contract with AT&T to FTS2001 with MCI, which provides better connectivity at less cost. We redesigned the network topology to support NOAA Fisheries' evolving programmatic business functions and to respond to increasing requirements for bandwidth. In a continuing commitment to provide network connectivity to all NMFS offices, we also added several new sites including Boise, Idaho; Lacey, WA; and the Pacific Island Office and the Enforcement Office in Honolulu.

- Enterprise-wide Mail – NOAA Fisheries moved from Lotus cc-Mail to Netscape mail along with the rest of NOAA. Netscape mail is more cost effective, provides better Internet access, and achieves a common messaging solution for all of

NOAA Fisheries and NOAA. In 2001 we completed the migration and offered training for all NOAA Fisheries employees.

- FRS – NOAA Fisheries enhanced its Financial Reporting System (FRS). We developed and deployed the FRS Reimbursable Funds System (RFS), Budget Formulation System , and the Program/Activity Tracking Module. RFS tracks and reports on the status of reimbursable funds within NOAA Fisheries. The system reconciles with FIMA, NOAA's system of record, and CAMS, when CAMS becomes the system of record. The Budget Formulation System aids in formulating future NOAA Fisheries budgets and tracking their status as they move through the budget process. The Program Activity Tracking Module maps NOAA Fisheries programs and activities to FIMA and CAMS task codes, so that cost cross cuts for various programs and activities can be determined. These cross-cuts are helpful at many levels, from NOAA Fisheries program managers to Congressional inquiries. Finally, we modified FRS to be compatible with CAMS by integrating the FIMA/FRS accounting classification code structure (ACCS) and the CAMS ACCS. As a result, FRS will be capable of generating reports in both the FIMA and CAMS ACCS, for both current and historical data.

- NWR Groundfish Permits – NOAA Fisheries initiated the Northwest Regional Groundfish Permit System enabling fishers participating in the Northwest Groundfish Fishery to renew their permits simply by getting online and responding to the questions on screen. This Web-based system will electronically collect Groundfish permit renewal fees from individuals and businesses, utilizing secure e-payment through the Bank of America and the US Treasury. This operational system will move about $25K directly into the US Treasury annually, and will provide proof-of-concept for applying e-pay technology to numerous other Fisheries programs that require fee collection from industry and the public. At this point, the Region has about 450 owners/permits that could possibly be renewed on-line, but for the first year we are hoping to have at least 20% of the current permit holders take advantage of this new and exciting way of doing business with NOAA Fisheries electronically.

- Permit Consultation Tracking System – NOAA Fisheries responded to the need for an automated tracking program for the Endangered Species Act consultation process by developing a Permit Consultation Tracking System (PCTS). PCTS provides faster customer service with less confusion, giving applicants who have Internet access a quick and easy way to check on their permit consultation, including where it is in the process and how long the application might take to complete. Previously, applicants had to contact the NOAA Fisheries to get the information they needed. Using the permit tracking number obtained when they filed there permit, applicants can now obtain important information such as the date NOAA Fisheries first received the permit, its current status, and the anticipated date of completion. The PCTS will also provide NOAA Fisheries

managers with another tool to better supervise and improve the consultation process.

- Constituent Database (CDB) – In responding to our constituents suggestions that we take a more collaborative approach to management, explaining our management measures better and involving constituents in the management process, NOAA Fisheries developed and implemented CDB, now known as NOAA Fisheries Constituent Communication System(CCS). CCS, is a Web-based tool to manage interactions with constituents. The CCS integrates a constituent directory with e-mail services to provide a very powerful communication management solution. Users can send e-mail to individual constituents or to custom distribution lists. All constituent documents are stored in a central repository for easy retrieval and data management.

- Restoration Center Database (RCDB) – NOAA Fisheries greatly enhanced its habitat restoration efforts this year with the development and implementation of the RCDB. The Office of Habitat Conservation's Restoration Center (RC) has funded over 250 restoration projects since its inception in 1991 and is continuing to fund projects at an increasing rate. The RC is often required to respond to congressional inquiries about their projects. The RCDB, a centralized relational database, is necessary to simplify and expedite this task. In response to the Clean Water Action Plan, restoration activities that result in a gain in wetland acreage must be tracked and reported. This database not only tracks acreage information, but information on project partners and funding as well, which minimizes double counting/reporting of restoration activities. By putting the database on the Web, regional staff and local partners can enter and update projects, further increasing the efficiency of the process. The database helps in soliciting new project proposals by allowing the public to view current project information and, in later versions, view pictures and geographic representations of the projects through a photo library and GIS system.

- The Alaska Regional (AKR) Office upgraded applications, including the Individual Fishing Quota (IFQ) system and the Community Development Quota (CDQ) system. These two applications were upgraded to run under the latest version of Oracle. Reports are now automatically generated on the AKR Web site every morning for more accurate and more frequent service to AKR customers. The Groundfish Accounting application, which tracks the groundfish harvested and processed for in-season management purposes, was converted from dBase to Oracle, and the License Limitation Program (LLP), which issues and tracks permits for vessels authorized to participate in the Bering Sea and Aleutian Islands Crab fishery was modified to reflect a number of policy changes and to reissue permits in December 2001.

- The Alaska Fisheries Science Center expanded their GIS capability through the purchase of additional software components that will integrate with major

database systems, as well as provide Web enabled GIS output. They installed Cisco Pix Firewall and tightened security on the AFSC network, centralized management of all UNIX servers, and replaced the DNS with a more secure SUN server. The office implemented a large scale Image Management system for the management of digital images gathered during scientific cruises, completed their WAN expansion, and expanded the storage capacity for major database systems.

- The Northwest Fisheries Science Center IT Team developed an IT Helpdesk Database and IT Inventory Database. The IT Helpdesk Database provides a repository for information about computers and printers which have been serviced, and how the issues were resolved. It allows the IT Team to track Helpdesk duties and report trends in order to best serve computer users at the NWFSC. The IT Inventory Database provides a centralized location for inventory data in order to streamline ordering and assure that essential items are always available. The Center also developed an Electronic Fish Catch Logbook (EFCL) which allows fishermen to submit catch-effort information electronically directly into a NOAA Fisheries database. Federal and state fishery managers are able to obtain access to standardized and higher quality data while, at the same time, reducing the reporting burden upon the fishing industry.

- The Southwest Regional office in Long Beach was able to complete the installation of 20 PCs (5 additional PCs were directed to the Long Beach Office) received from Census. These PCs, associated with the purchase of an additional 5 PCs, allowed the Long Beach office to accomplish the 20% target for desktop replacement. The 4 HP LaserJet 8000 printers received from Census have also been integrated into the Long Beach operation. The Long Beach office also added 1 24-port 10/100 hub to continue implementation of 100Mbps service. The SGI UNIX workstation has been replaced with a Windows NT system. The Santa Rosa office improved support for its mobile workforce by purchasing an additional 5 notebook computers. The 5 HP LaserJet 8000 printers received from Census have also been integrated into the Santa Rosa operation. The Santa Rosa office also added 1 24-port 10/100 hub to continue implementation of 100Mbps service.

- In the Northeast Region, all major software systems were upgraded to current versions. To the extent possible, all PCs were upgraded to Windows 98. The firewall system (Netscreen) was also upgraded and a new SUN server was purchased to support installation of Oracle 8i. A Dell server was purchased to expand knowledge of and support for the use of Red Hat UNIX as an alternative operating system for desktop units and network servers.

  The development and implementation of the Commercial Fisheries Data Entry System (CODES) for the NER's Fisheries Statistics Office was completed. This new version of the CODES system is Windows based and supports electronic transfer of data from dealers. Conversion of all database systems from Oracle 7

to 8i was a major accomplishment in FY 2001. Joining efforts with the National Ocean Service, Northeast Regional Office developers worked with representatives from the Office of Marine and Aviation developers to complete development and implementation of phase one (trawl survey) of the Fisheries Scientific Computer System (FSCS) aboard R/Vs Albatross IV and Delaware II. FSCS is a sophisticated data acquisition system designed specifically to digitally collect all critical fishery-independent data aboard fisheries research vessels. The Office completed the development and implementation of the data entry phase of the commercial fisheries Biological Sample Monitoring Database System (BSMDBS). BSMDBS is a Web-based system with links to Oracle tables. The design of a new data entry/audit/edit system for the Observer Database System (OBDBS) was also completed this fiscal year. This system is a PC/Windows-based system which will allow NEC staff and contractors to enter data collected aboard commercial fishing vessels. OBDBS supports a client/server interface to Oracle.

- The Southeast Region, under an IT-95 Initiative, has changed its mode of operations from centralized computer serving remote terminals to a truly distributed system of Oracle Database servers, Oracle Web servers, and Client/Server microcomputers. Local-Area-Networks, workstations, and host computers located in geographically distant areas are linked via the Wide-Area Internet networks. In accomplishing this change, the office proceeded with the migration of "flat file" independent data systems, processing on a centralized host computer (Unisys A10), to a new distributed-host platform, using an integrated Oracle DBMS, thus the establishment of the Southeast Fisheries Information Network (SEFIN) project. SEFIN will incorporate all the data collection systems currently under the management of the Southeast Fisheries Science Center. The five-year project is now in the fourth year of development. The Fisheries Logbook System (FLS) has been deployed in an Oracle DBMS that encompasses the use of the latest Oracle Developer and Designer tools, using the original migrated data collection systems. The redesign process is the incorporation of other related collection systems into the new system, requiring the conversion of older Oracle version programs into the latest version of Oracle. The Domestic Longline System (DLS) has also been re-engineered and incorporated into SEFIN, and the Pelagic Longline Data, which was re-engineered to fit into the FLS, will have all legacy data incorporated into SEFIN in early FY 2002.

National Ocean Service

NOS accomplishments for FY 2001 were:

- IT Security – All NOS IT security plans have been accredited. Risk assessments and contingency plans have been written and security plans are currently in annual review.

- FTS 2001 Transition – NOS finished the transition of FTS 2000 to FTS 2001. This includes voice circuits, wide area data circuits (Frame Relay and T-1), and video conferencing (ISDN). The Office of Ocean and Coastal Resource Management, Office of Coast Survey, and National Geodetic Survey all contributed to this effort, as well as field offices of the Office of Response and Restoration, the Coastal Services Center, the National Centers for Coastal Ocean Science in Beaufort, North Carolina, and Charleston, South Carolina.

- Silver Spring Metro Campus Trusted Campus Network – The NOS Office of National Geodetic Survey and the Center for Operational Oceanographic Products and Services moved their headquarters networks behind the SSMC Trusted Campus Network to ensure that their systems are protected by this firewall.

- Terabyte RAID storage on the NOAA Whiting – The NOS Office of Coast Survey installed a 1+ terabyte data storage system (fibre channel RAID) on the Whiting that enables larger bathymetric surveys, and enhances data processing aboard ship.

- Beowulf Cluster for Hydrodynamic Modeling – The NOS Office of Coast Survey constructed a Beowulf cluster computer using 33 Pentium computers supplied by the Census Bureau. The combined computational power of the PC's creates a mini-parallel computer capable of solving complex hydrodynamic codes at speeds faster than the previously used SGI Octane computer at a small fraction of the cost. The cluster is being used to run a Chesapeake Bay 3-D finite element model with 21,000 elements and 11 vertical levels. Year-long simulations which would have tied up the SGI computer for a full week can be run on the cluster in a few days.

- Statistical Monitoring of NOS Web sites – The NOS Special Projects Office has coordinated NOS-wide statistical monitoring of all NOS Web sites with services published on a common Web page. This service supports management review of Website activity based upon a common set of statistical analysis.

National Weather Service

In FY 2001 NWS:

- Began deploying the NEXRAD Open Radar Products Generator (RPG), which is replacing the current operational RPG.

- Completed the technical upgrade (Phase II installation) to the NWS supercomputer used to run operational weather and climate forecast models.

- Began deploying the final major AWIPS Build-5 and making substantial progress toward meeting the functional improvements laid out in the AWIPS Independent Review Team Assessment Report of 14 August 1998.

- Began deploying the upgraded ASOS processor and upgraded Dewpoint Sensors. These upgrades are scheduled to be completed in late FY 2001 and early FY 2002.

- Began migrating from the obsolete, no longer manufactured or supported Token Ring network architecture of the NWS Network to Ethernet, which is more cost-effective to install and operate, thus a good investment for many years to come.

- Began replacing the current legacy IBM Type I cable with a state-of-the-art structured wiring system consisting of CAT6 cable and fiber optic to the desktop. This design contains the capability to accommodate future growth associated with adds, moves, changes, as well as providing a higher capacity of bandwidth, improving reliability, manageability and reducing cost of ownership.

- Sustained a high growth rate of government-to-customer E-Gov solutions, particularly regarding data, products, and information available through the Internet. Completed the prototype of the NWS "common image" Web page to improve NWS Web page navigation (information access) and centralize NWS Web infrastructure support services.

Office of Marine and Aviation Operations

FY 2001 accomplishments of the Office of Marine and Aviation Operations were:

- A Fisheries version of the Scientific Computer System (FSCS) was developed and installed on two NOAA vessels, the NOAA Ships ALBATROSS IV and the DELAWARE II.

- The NOAA Enterprise Messaging System (NEMS) had NOAA Fleet-wide implementation issues addressed and NEMS was then installed on 7 of 14 NOAA Ships. The remainder to be installed in FY 2002.

Office of Oceanic and Atmospheric Research

FY 2001 accomplishments of the OAR include:

- Financial Database Management System – FDMS, OAR's new financial management system was installed at all OAR operating units in March, 2001. This new system will enhance our ability to operate effectively and make sound management decisions regarding the allocation and use of financial resources.

More accurate, timely data will be available to management, administrative, and budget personnel OAR wide.

- The CIO and her staff continued to work with OFA to help develop funding requests for the planned electronic grants processing system, Grants OnLine. This included working on the OMB Form 300, briefings for the NOAA and DOC IT Review Boards, and a briefing presented to the new OFA CIO on plans for the initiative. OAR also contributed funds, along with other L.O.s to support existing efforts to consolidate the NMFS and NOS systems (electronic systems which will form the basis of the new system), and continue work on the existing application for its expansion to Grants OnLine.

- OAR's CIO Office led an effort to procure a NOAA-wide license for bibliographic software for use by NOAA libraries and P.I.s. This software includes ProCite, Reference Manager, and EndNote by ISI Web of Science software. In the Washington Metropolitan area NOAA researchers and scientists already use this service, which became available through the NOAA Central Library in April 2001. With the new NOAA-wide license, all OAR scientists and researchers in the field will be able to use the products. With the addition of the bibliographic management tools, OAR scientists will now be able to export references directly to their collections from the Web of Science resource. The OAR CIO provided sixty percent of the funding for the bibliographic tools in FY 2001, but when the license renewal is due for FY 2002, OAR will solicit equally shared funding from the other NOAA Line Offices.

- Working with NOAA CIO Office staff, OAR also bought at huge cost savings:

  - New Corel licenses
  - Additional Adobe Acrobat licenses
  - WinZip
  - Macromedia products (Dreamweaver, Free Hand, etc.)

- In FY 2000, the Environmental Technology Laboratory CIO led the effort to procure an OAR-wide license for IDL. IDL is software for data analysis, visualization, and cross-platform application development. Visualization Software (VS) is a cornerstone tool for the scientific research conducted by OAR and is used to analyze, summarize, display and present information. Outside of OAR, other scientists in NOAA began to see the capabilities of the software, and in FY 2001, NESDIS partnered with OAR to share in an OAR/NESDIS site license, thus halving the cost to OAR.

- As a basis for OAR telework policy, the CIO staff studied all possible viable options for accommodating future teleworkers with IT equipment and communications capability and developed a report which identified IT issues and options as a basis for the telework policy. This included identifying potential

problems and technological solutions, for example, an application server. The staff recommended that each Laboratory be allowed to select its own options for telework IT arrangements, based on resources available. We also made recommendations to senior management on which options would work best for OAR teleworkers in the Silver Spring/Washington, D.C. Metro area.

- HQ staff consolidated all East Coast Labs and Headquarters on a single Netscape Directory Server. The Netscape Directory Server hosts address book and e-mail addressing functions for OAR HQ, AOML, GFDL, GLERL, OGP, and all ARL sites. A "hot, swappable" backup directory server was set up to provide immediate, automatic failover in case the primary server goes down. This resulted in high availability directory services, while saving time and money by maintaining only two machines for ten sites.

- Members of the CIO staff worked in collaboration to develop the first computer services handbook for HQ computer users.

- Web Server Consolidation Study – The CIO's Office led the OAR portion of this NOAA study, and reported to NOAA the specifications of all existing Web servers and Web sites in OAR. Data from all L.O.s was gathered and analyzed, and suggestions for improved management were provided to the NOAA CIO's office, including the recommendation for creation of a Web Registration Process. Other recommendations included: site mirroring to remove single points of failure, cross-site load balancing, and the formation of the NOAA Working Group to provide ongoing guidance on NOAA's Web activities.

- The OAR CIO's Office is working with the NOAA CIO Office to design, develop, and deploy a new NOAA-wide Web server registration system. This system will be an on-line database for system administrators to register their Web servers and will include policy guidance to implement the registration procedure. This system will give OAR and NOAA IT managers the ability to evaluate Web servers for security, response, and system performance.

Section 2. Financial Summary

NOAA's financial summary is attached as Appendix A.

Section 3. Management and Major System Initiatives

3.1 List of Major and Significant Systems

Major Systems:

AWIPS/NOAAPORT
Central Environmental Satellite Computer System
Comprehensive Large Array-data Stewardship System (CLASS)
Forecast Systems Lab Massively-Parallel Processor
GFDL High Performance Computing
GOES I-M Ground System
GOES N-Q Ground System
NCEP High Performance Computer Systems
NEXRAD System Product Improvement
NEXRAD System Operations & Maintenance (DOC)
NWS Telecommunications Gateway (NWSTG)
NWS Telecommunications Gateway System Critical Infrastructure Protection
Polar-Orbiting Operational Environmental Satellite Ground System

Significant Systems:

Climate Database Modernization Program
Data Processing & Analysis Subsystem for NWLON
Geodetic Support System
Nautical Charting and Surveying
NCEP Infrastructure and Office Automation
NOAA National Data Centers (NNDC) NVDS
NWS Gateway Legacy Sys. Modernization- ASOS
NWS Gateway Legacy Sys. Modernization- Other
NWS/Office of Science & Technology - Other systems
NWS/Office of Operational Systems-Telecomm.
NWS/ Office of Operational Systems-Other Costs
NWS/OST/ASOS
NWS Supercomputer Back-up
PORTS
Satellite Active Archive
Satellite Environmental Processing System
Search and Rescue Satellite-Aided Tracking

3.2 Exhibit 300s for NOAA Major Systems

The Exhibit 300s are attached to this document as Appendix B.

3.3 Management IT Initiatives

Office of Chief Information Officer and High Performance Computing and Communications

Initiatives of the CIO's office and related milestones are:

•	HPCC networking plan completed	12/01
•	Initiative NOAA Virtual University on-line	01/02
•	Complete review of security planning software	01/02
•	Update NOAA IT Electronic Store	01/02
•	Advanced NOAA Web server database made operational	02/02
•	Select Intrusion Detection System upgrade for high-speed gigabit networks	03/02
•	Start pilot of government-wide security patch upgrade system	03/02
•	Upgrade of NOAA's principal Internet Service	03/02
•	Inventory Software Licenses	03/02
•	Establish Operational Webcast capability	04/02
•	Establish Redundant Network Gateway for the SSMC	04/02
•	Software and Hardware Management Process for OCIO/HPCC developed	05/02
•	Implement Software and Hardware Management Process for OCIO/HPCC	08/02
•	Complete security accreditation for all NOAA systems	09/02
•	Complete draft IT security manual	09/02
•	Extend Gigabit rate Metropolitan Area Network to Suitland	09/02
•	Select technical security auditing software	09/02

National Environmental Satellite, Data, and Information Services

NESDIS will be pursuing the following IT initiatives:

- NESDIS will continue efforts to coordinate across NESDIS to identify a COTS e-commerce solution.

- NESDIS will replace its mapping capability with a COTS GIS Internet Mapping tool to support Open GIS Consortium Viewers.

- NESDIS will implement Web-based Metadata Application software.

National Marine Fisheries Service

NMFS will be pursuing the following IT initiatives.

- Conduct Network Security Assessment – With the assistance of an information security contractor, NOAA Fisheries will conduct a comprehensive network security analysis. The analysis is targeted at defining current security weakness within the NOAA Fisheries infrastructure and providing recommendations for the resolution of the deficiencies. In addition, NOAA Fisheries will conduct a disaster recovery analysis and develop a detailed Recovery Plan to ensure all critical data, applications and information can be quickly recovered in the event of an unforeseen disaster.

- Enhance Network Security and Operations – NOAA Fisheries will take corrective actions based on recommendations from the Security Assessment. CISCO WORKS 2000 network monitoring software will be deployed to provide proactive and preemptive support of the NOAA Fisheries Wide-Area-Network.

- IT Operational Policy and Procedures – NOAA Fisheries is reviewing and where necessary updating agency guidelines, policies, and procedures regarding WAN and Web site operations; Web site content quality control; IT security and IT management coordination; and IT expenditures to ensure an Agency-wide commitment to maintaining a unified approach to our operational procedures.

- Enhance Wide-Area-Network – Provide connectivity to all NOAA Fisheries employees. A goal this year is to identify all NOAA Fisheries employees lacking connectivity at all remote locations and provide connectivity alternatives for each of these sites, including options for security and funding. NOAA Fisheries hopes to have a project underway that will offer secure access to the corporate intranet for all NOAA Fisheries employees.

- Internet-Based Rulemaking Pilot – NOAA Fisheries plans to deploy a pilot for providing a one-stop Web site for the public to comment on proposed rules. This

Web site will enable the public to post comments on a proposed rule and to review the comments of others. Fisheries will complete the systems development process for the rulemaking pilot program started in FY 2001 and roll it out using a Highly Migratory Species rule in first quarter of FY 2002. The pilot will be expanded to include rulemaking efforts of one of the five NOAA Fisheries Regional Offices. Eventually this Website will service all rulemaking activities throughout NOAA Fisheries.

- Deploy the FRS AOP Module – The Annual Operating Plan (AOP) Module will allow users to input, track, and report on Annual Operating Plan data from a Web environment. This data may contain but is not limited to the following: programs, projects, milestones, narratives, budgets, personnel, and crosswalk information. The AOP Module will be tightly integrated with the existing FRS system.

- Improve Web Services – Fisheries will redesign and deploy new Internet Web sites for the Offices of Law Enforcement, EEO, Management and Budget, and Diversity; configure and deploy a Web statistics program to track Web trends and evaluate Web usability; link a new Extranet server for use in secure e-commerce and data driven Web site development, a new three-node Internet server Web farm; and configure and deploy a standard Web development framework.

- Marine Mammal Health and Stranding Response Program (MMHSRP) – The NOAA Fisheries Office of Protected Resources (PR) is the coordinating office for program and activities of the Marine Mammal Health and Stranding Response Program Database (MMHSRP DATABASE). PR has twenty years of basic data on stranding events from those authorized to respond to marine mammal strandings under section 109(h) and 112(c). Stranding data provides valuable descriptive information for NOAA Fisheries conservation and management decisions. Additionally, as protected resource issues become increasingly important in the context of fishery management, it is necessary that this information be standardized and available in electronic format. Fisheries is often asked by constituents and members of Congress for nationwide stranding statistics and trends. To better provide this information, PR proposes to standardize data collection and management by establishing a national marine mammal database that includes existing regional databases and brings them together in a common compatible format, utilizing a single, centrally-located database. This will allow NOAA Fisheries to better archive stranding data as well as compare data between the regions, and allow NOAA Fisheries to efficiently query and analyze stranding data for conservation purposes, and provide stranding information events to constituents upon request.

NMFS Initiative Milestones:

Enhance Network Security and Operations	QTR 3
Identify All NOAA Fisheries employees lacking connectivity	QTR 2
Provide connectivity to all NOAA Fisheries employees	QTR 4
Deploy Internet-based rulemaking Pilot	QTR1
FRS/CAMS Integration	QTR4
Deploy the FRS AOP Module	QTR3
Improve Web Services	QTR 4
Restoration Center Database	QTR 2
Marine Mammal Health and Stranding Response Program	QTR 2

National Ocean Service

NOS will have initiatives in the following areas:

- IT for Office Support Study: The ITRB will study how IT for Office Support can be improved in NOS. They will examine help desk support, applications and operating systems. The study will be completed by June 30, 2002.

- Web Support Study: The ITRB will also study how NOS can improve it's Web server and Web site management. The study will examine the management of servers, the interrelationship of servers, and the how the individual sites are managed. The study will be completed by June 30, 2002.

National Weather Service

In FY 2002 the NWS will:

- Execute the NWS IT Management Plan to meet the Department of Commerce IT Restructuring directives.

- Complete the NWS IT Security Accreditation Process and initiate the annual recurring IT security review process.

  Following are the base performance objectives required to initiate the review process :

- ✓ Develop a schedule which accomplishes security review of 33% of all resources. (1st Qtr FY02)
- ✓ Develop an assessment checklist for use in review process. (1st QTR FY02)
- ✓ Perform reviews of 33% of Security Systems. (4th QTR FY02)
- ✓ Develop after action process for reviews. (2nd QTR FY02)
- ✓ Complete the review process of 33% of Security Systems by the end of every FY.

- Modify the NWS IT Plans and IT Architecture to support NWS IT management needs.
- Develop plans, determine costs, and coordinate rewiring (upgrading) of the SSMC-2 telecommunications network infrastructure. Continue migration of local area networks (LAN) to the Ethernet technology.
- Establish policies and standards for NWS integration and use of GIS applications and Linux operating system software.
- Ensure compliance of the IT architectures, policy, and business needs of major IT acquisitions such as the NCEP supercomputer.
- Lead the planning for a new NWS telecommunications network (NWSnet) and a common "Web farm" architecture.
- Begin design for sufficient remote-access network resources and procedures to support NWS Teleworking.
- Begin migration of AWIPS to Linux platforms for all NWS AWIPS systems.
- Begin implementation of the NWS Telecommunications Gateway backup system at Mt. Weather, Va.
- Begin Automated Hydrology Processing System (AHPS) development.
- Continue to seek resources for modernizing the Cooperative Observing Network.

Office of Marine and Aviation Operations

The Office of Marine and Aviation Operations (OMAO) plans to solve the shipboard on-line security awareness training issues, improve the efficiency of ship-to-shore e-mail message

delivery, continue development of the OMAO IT Architecture, and complete implementation of the IT Restructuring within DOC and NOAA guidelines.

Office of Oceanic and Atmospheric Research

In FY 2002 the OAR will:

- Implement the OAR IT Restructuring Plan. People are the greatest asset of any organization. Located in the Office of the OAR Assistant Administrator, the CIO virtual organization will build and sustain a high-trust and high-performance, well-coordinated team, including the geographically dispersed Senior IT Managers in the field as well as in the Headquarters. Top priority will be given to developing this IT community into a cohesive and synergistic team with core values, common goals, open communication, rotational assignments, and appropriate training programs. The CIO Office is structured as a virtual organization where its diverse members work as a synergistic team to improve all aspects of IT activities and address critical issues with OAR-wide impact, including IT security and IT resources management.

  Beginning in FY 2002, all OAR organizational units will follow the procedures and processes for investment management and procurement which have been established by the OAR CIO's Office and are outlined in the DOC/OAR IT Restructuring Plan.

- Make Rotational Assignments. In March, 2001, the CIO and OAR IT Board began planning a formal "rotational assignments" program for the OAR IT community. The purpose of a rotational program is to provide opportunities for personnel to gain experience in information resources management, IT planning, coordination and implementation of OAR-wide and/or NOAA-wide projects and operations in different field locations. Announcements of assignments available at OAR Headquarters will be made periodically. Assignments will be available throughout the year, with a minimum of 4 weeks and a maximum of one year. In the past, individuals have volunteered for detail to Silver Spring's OAR Headquarters, to the mutual benefit of the individual and the HQ. The program will provide an excellent opportunity for field people to work with peers in other NOAA Line Offices, and to meet and interact with NOAA and DOC management in general. Similarly, it will allow HQ personnel to learn more about IT operations in the field.

- Implement Netscape Calendar OAR-wide. Plans are underway for a full implementation of the Netscape Calendar. Training materials are being developed in-house. All users will make the transition over to the new Web-based package. Because iCalendar 5 is an on-line system, it allows users to access their calendars remotely. In addition, all of OAR and NOAA will use the same calendar software which will allow for enhanced cross-enterprise scheduling and communication.

- Participate in E-Learning. OAR will participate in the NOAA E-Learning initiative as soon as it is made available. In partnership with DOT, NOAA plans to develop a

"Virtual University" which will offer in excess of 1,800 courses for cost-efficient delivery of core Government training via several distance learning technologies.

- Implement Citrix Metaframe in OAR HQ. Citrix Metaframe is a network management tool that allows a server-to-host client applications. OAR HQ will use it to replace the current client/server relationship with a mainframe computing model. Centrally-managed resources will greatly simplify user workstation maintenance and troubleshooting. This technology enables more efficient control of software licensing and tracking. In addition, Citrix Metaframe allows greater flexibility for remote access to users' accounts, which will be a significant benefit for off-site and telework.

- Convert to Windows 2000 in OAR HQ. Microsoft Windows 2000 is the computer operating system upgrade from the Windows NT system, which is currently in use at OAR HQ. The new operating system will offer greater stability and functionality, including faster access to network and Internet resources and the ability to run the latest software packages. The conversion to Windows 2000 will take place in tandem with the transition to a Citrix Metaframe environment.

- Redesign the OAR HQ Network. The plan is to redesign the OAR HQ LAN to enhance localized access speeds. Client-server communication speeds, network storage, network printing, and messaging will deliver better performance once the LAN architecture has been redesigned to take full advantage of available hardware and software.

- Pilot a Software Management Package. OAR HQ has signed an MOU with the NOAA CIO Office to pilot a new application package for managing software resources, including license tracking. The NOAA CIO Office will fund the pilot. The pilot will include approximately 50% of the OAR Headquarters' desktop configurations.

3.4 Summary of Systems Significantly Behind Schedule, Over Budget, and/or Not Delivering Expected Benefits

None.

Appendix A

Financial Summary in OMB Circular A-100, Exhibit 53 Format

Exhibit 53 Agency IT Investment Portfolio

Department of Commerce
National Oceanic Atmospheric Adminstration
(In Thousands)

		Total Investment			Percentages - FY2003		DME			Steady State		
Code	Entry	FY 2001	FY 2002	FY 2003	Financial	IT Security	FY 2001	FY 2002	FY 2003	FY 2001	FY 2002	FY 2003
006-48-00-00-00-0000-00 0	**NOAA TOTAL IT INVESTMENT PORTIFOLIO (Sum of all parts 1-4)**	412313	447010	470355			78333	90542	86553	84812	89472	96831
006-48-01-00-00-0000-00 0	**Part 1. IT Systems Mission Areas (Subtotal for all mission areas in part 1 (1,12-17))**	279254	298611	308525			78333	90542	86553	84812	89472	96831
006-48-01-00-00-0000-00 0	**Mission Area 1: Financial Management**											
006-48-01-01-01-1030-02 0	Commerce Administrative Management System	20623	20716	18101	100	3	9836	6856	1591	9987	12948	14530
006-48-01-01-01-1030-04 0	ORF .....(CORE CAMS- ISMO).....	800	912	1980			0	0	0	0	0	0
006-48-01-01-01-1030-04 0	PAC .....(CORE CAMS).....	12572	12572	8664			0	0	0	0	0	0
006-48-01-01-01-1030-02 0	Subtotal, funding sources (CORE CAMS)	13372	13484	10644			0	0	0	0	0	0
006-48-01-01-01-1030-04 0	PAC (WCF- CORE CAMS-Transfer to DOC)	6151	6151	6357								
006-48-01-01-01-1030-04 0	PAC (NON-CORE CAMS- NOAA Requirement)	1100	1081	1100								
006-48-01-01-01-1030-07 0	Subtotal, PAC funding	19823	19804	16121			0	0	0	0	0	0
006-48-01-01-01-1030-07 0	Subtotal, funding sources	14472	14565	11744			0	0	0	0	0	0
	Significant Project											
006-48-01-01-02-1030-02 0	NOAA Financial Management (FIMA)	2224	2336	1044	100	2	0	0	0	2224	2336	1044
006-48-01-01-03-1030-02 0	Small/Other Projects and Total Investments	0	0	0								
	Subtotal, Major Projects for Mission Area 1	20623	20716	18101	0	3	9836	6856	1591	9987	12948	14530
	Subtotal, Significant Projects for Mission Area 1	2224	2336	1044	100	2	0	0	0	2224	2336	1044
	Subtotal, Small/Other Projects for Mission Area 1	0	0	0								
	Total for Mission Area 1	22847	23052	19145	100		9836	6856	1591	12211	15284	15574
006-48-01-12-00-0000-00 0	**Mission Area 12: Advance Short-Term Warning and Forecast Services**											
	Major Projects											
006-48-01-12-01-1010-02 0	AWIPS/NOAAPORT	53582	54748	55365	0	3.5	19259	19270	17987	34323	35478	37378
006-48-01-12-01-1020-02 0	NEXRAD System Product Improvement (DOC fund)	9212	9212	9212		0.2	9212	9212	9212	0	0	0
006-48-01-12-01-2012-02 0	NEXRAD System Operations & Maintenance(DOC)	11638	12507	13115	0	1.22	0	0	0	11638	12507	13115
006-48-01-12-01-1040-02 0	NCEP High Performance Computer Systems	17871	18043	18425	0	*	10845	12377	14049	7026.3	5666.4	4375
006-48-01-12-01-1050-02 0	Forecast Systems Lab Massively-Parallel Processor	3751	3826	3916		0.2	3351	3391	3446	400	435	470
006-48-01-12-01-1100-02 0	GFDL High Performance Computing	2868	3601.2	3639		2.1	1934	2403.2	2470.8	934	1198	1168.2
006-48-01-12-01-1030-02 0	GOES I-M Ground System	6,299	7773	4570	0	0.001	5559	7169	3952	740	604	618
006-48-01-12-01-1081-02 0	GOES N-Q Ground System	550	300	2150		**	300	300	2150	250	0	0
006-48-01-12-01-1060-02 0	Polar-Orbiting Operational Environmental Satellite Ground System	4694	4298	5754		0.002	3504	3694	5136	1190	604	618
006-48-01-12-01-1070-02 0	NWS Telecommunications Gateway (NWSTG)	6828	7217	7217		1	0	0	0	6828	7217	7217
006-48-01-12-01-1071-02 0	NWS Telecommunications Gateway System Critical Infrastructure Protection	0	7460	3000		3	0	7460	0	0	0	3000
006-48-01-12-01-2015-02 0	Central Environmental Satellite Computer System	10576	11189	11823	0	5	3597	3796	4029	6979	7393	7794
006-48-01-12-02-0000-00	Significant Projects											
006-48-01-12-02-2020-02 0	Satellite Environmental Processing System	10077	8898	8656	0	0.3						
006-48-01-12-02-1040-02 0	NCEP Infrastructure and Office Automation	10985	10516	10108		5.5						

006-48-01-12-02-1041-02 0	NWS Supercomputer Back-up	0	0	0								
006-48-01-12-02-1070-02 0	NWS Gateway Legacy Sys. Modernization- ASOS	0	0	0								
006-48-01-12-02-1070-02 0	NWS Gateway Legacy Sys. Modernization- Other	0	0	0								
006-48-01-12-02-2130-02 0	NWS/Office of Science & Technology - Other system	7277	7204	9265		0						
006-48-01-12-02-2140-02 0	NWS/Offiice of Operational Systems-Telecomm.	9349	9573	9221		0						
006-48-01-12-02-2150-02 0	NWS/ Office of Operational Systems-Other Costs	0	0	0		0						
006-48-01-12-02-2011-02 0	NWS/OST/ASOS	5961	9069	7551	0	0						
006-48-01-12-03-2012-02 0	Small/Other Projects and Total Investment	16875	20530	22002								
	Subtotal for Major Projects for Mission Area 12	127869	140174	138186			57561	69072	62432	70308	71102	75753
	Subtotal for Significant Projects for Mission Area 12	43649	45260	44801								
	Subtotal for Small/other projects for Mission Area 12	16875	20530	22002								
	Total for Mission Area 12	188394	205965	204989			57561	69072	62432	70308	71102	75753
006-48-01-13-00-0000-00 0	**Mission Area 13: Implement Seasonal to Interannual Climate Forecast**											
006-48-01-13-01-0000-00 0	Major Project											
006-48-01-13-01-1040-02 0	NCEP High Performance Computer Systems	1985.7	2004.8	7896.3		0	1205	1375.2	6021	780.7	629.6	1875
006-48-01-13-01-1100-02 0	GFDL High Performance Computing	4302	5401.8	5458.5		2.1	2901	3604.8	3706.2	1401	1797	1752.3
006-48-01-13-02-0000-00 0	Significant Projects											
006-48-01-13-02-2030-02 0	Satellite Active Archive	286.1	415	308		2						
006-48-01-13-02-2040-02 0	NOAA National Data Centers (NNDC) NVDS	3476	3476	3476		15						
006-48-01-13-02-2050-02 0	Climate Database Modernization Program	15225	6200	6200		1						
006-48-01-13-02-1040-02 0	NCEP Infrastructure and Office Automation	1938.6	1855.8	2527		5.5						
006-48-01-13-02-1041-02 0	NWS Supercomputer Back-up	0	0	0								
006-48-01-13-03-0000-99 0	Small/Other Projects and Total Investment	676.02	761.05	798								
	Subtotal, Major Projects for Mission Area 13	6287.7	7406.6	13355			4106	4980	9727.2	2181.7	2426.6	3627.3
	Subtotal, Significant Projects for Mission Area 13	20926	11947	12511								
	Subtotal, Small/Other Projects for Mission Area 13	676.02	761.05	798								
	Total for Mission Area 13	27889	20114	26664								
006-48-01-14-00-0000-00 0	**Mission Area 14:Predict and Access Decadal to Centennial Change**											
006-48-01-14-01-0000-00 0	Major IT Projects											
006-48-01-14-01-1100-02 0	GFDL High-Performance Computing	7170	9003	9097.5	0	2.1	4835	6008	6177	2335	2995	2920.5
006-48-01-14-01-2110-02 0	Comprehensive Large Array-data Stewardship System (CLASS)	1995	3626	6626		5	1995	3626	6626	0	0	0
006-48-01-14-02-0000-00 0	Significant Project:											
006-48-01-14-02-2015-02 0	Satellite Active Archive (SAA)	1716.6	2490	1848		2						
006-48-01-14-03-9999-99 0	Small/Other Projects and Total Investment	2065.9	2331.7	2449.2								
	Subtotal, Major Projects for Mission Area 14	9165	12629	15724			6830	9634	12803	2335	2995	2920.5
	Subtotal, Significant Projects for Mission Area 14	1716.6	2490	1848								
	Subtotal, Small/Other Projects for Mission Area 14	2065.9	2331.7	2449.2								
006-48-01-14-99-9999-99 0	Total for Mission Area 14	12948	17451	20021			0	0	0	0	0	0
006-48-01-15-00-0000-00 0	**Mission Area 15: Promote Safe Navigation**											
006-48-01-15-01-9999-99 0	Major Project	0	0	0								
006-48-01-15-02-0000-00 0	Significant Projects											
006-48-01-15-02-2015-02 0	Nautical Charting and Surveying	2515	2835	3191		2						
006-48-01-15-02-2025-02 0	PORTS	1113	1741	1813		0.0066						
006-48-01-15-02-2035-02 0	Data Processing & Analysis Subsystem for NWLON	737	1032	1033		0.0077						
006-48-01-15-02-2045-02 0	Geodetic Support System	655	688	720		4.3						
006-48-01-15-02-2100-02 0	Search and Rescue Satellite Aided Tracking	10866	3230	3504		2						

006-48-01-15-03-0000-02 0	Small/Other Projects and Total Investment	212.7	237.1	247.6								
	Subtotal, Major Projects for Mission Area 15	0	0	0								
	Subtotal, Significant Projects for Mission Area 15	15886	9526	10261								
	Subtotal, Small/Other Projects for Mission Area 15	212.7	237.1	247.6								
	Total for Mission Area 15	16099	9763.1	10509								
006-48-01-16-00-0000-00 0	**Mission Area 16: Build Sustainable Fisheries and Recover Protected Species**											
006-48-01-16-01-0000-00 0	Major Project Mission Area 16 and Total Invest	0	0	0			0	0	0	0	0	0
006-48-01-16-02-0000-00 0	Significant Projects Mission Area 16 & Total Invest	0	0	0								
006-48-01-16-03-0000-02 0	Small/Other Projects Mission Area 16 & Total Invest	7045.2	17228	22871								
006-48-01-16-99-9999-99 0	Total for Mission Area 16	7045.2	17228	22871			0	0	0	0	0	0
006-48-01-17-00-0000-00 0	**Mission Area 17: Sustain Healthy Coasts**											
006-48-01-17-01-0000-00 0	Major Project	0	0	0			0	0	0	0	0	0
006-48-01-17-02-0000-00 0	Significant Project											
006-48-01-17-02-2030-02 0	Satellite Active Archive (SAA)	858.3	1245	924		2						
006-48-01-17-03-9999-02 0	Small/Other Projects and Total Investment	3174.2	3792.8	3402.7								
	Subtotal, Major Projects for Mission Area 17	0	0	0								
	Subtotal, Significant Projects for Mission Area 17	858.3	1245	924								
	Subtotal, Small/Other Projects for Mission Area 17	3174.2	3792.8	3402.7								
	Total for Mission Area 17	4032.5	5037.8	4326.7								
006-48-01-99-01-9999-99 0	Total,Major Projects,Part 1	163945	180926	185365			78333	90542	86553	84812	89472	96831
006-48-01-99-02-9999-99 0	Total, Significant Projects, Part 1	85260	72804	71389			0	0	0	0	0	0
006-48-01-99-03-9999-99 0	Total, Small/Other Projects, Part 1	30049	44881	51771			0	0	0	0	0	0
006-48-01-99-99-9999-99 0	Total, IT Investments for All Part 1	279254	298611	308525			78333	90542	86553	84812	89472	96831
006-48-02-00-00-0000-00 0	**Part 2. IT Infrastructure and Office Automation (subtotal for all investments under part 2)**	126393	141331	154102			0	0	0	0	0	0
006-48-02-20-01-0000-00 0	Major Project and Total Investment	0	0	0			0	0	0	0	0	0
006-48-02-20-02-0000-00 0	Significant Project and Total Investment:											
006-48-02-20-02-2210-00 0	NOAA-wide Information Technology Security	0	0	4000		100	0	0	0	0	0	0
006-48-02-20-03-0000-02 0	Small/Other Projects and Total Investment	126393	141331	150102			0	0	0	0	0	0
	Total Major Projects, All Infrastructure	0	0	0			0	0	0	0	0	0
	Total Significant Projects, All Infrastructure	0	0	4000			0	0	0	0	0	0
	Total Small/Other Projects, All Infrastructure	126393	141331	150102			0	0	0	0	0	0
	Total IT Investments for All Infrastructure	126393	141331	154102			0	0	0	0	0	0
006-48-03-00-00-0000-00 0	**Part 3. Enterprise Architecture and Planning (subtotal for all investments under part 3)**	6205	6518	7167								
006-48-03-19-01-0000-00 0	Major Project and total investment	0	0	0			0	0	0	0	0	0
006-48-03-19-02-0000-00 0	Significant Project											
006-48-03-19-02-2120-02 0	NOAA-Wide Enterprise IT Architecture and Planning	6205	6518	7167		13	0	0	0	0	0	0
006-48-03-19-03-0000-02 0	Small/other projects and total investment	0	0	0			0	0	0	0	0	0
	Total,Major Projects,All IT Architecture	0	0	0			0	0	0	0	0	0
	Total Significant Projects, All IT Architecture	6205	6518	7167			0	0	0	0	0	0
	Total Small/Other Projects, All IT Architecture	0	0	0			0	0	0	0	0	0
	Total IT Investments for All IT Architecture	6205	6518	7167			0	0	0	0	0	0

006-48-04-00-00-0000-00 0	**Part 4. Grants Management (subtotal for all investments under part 4)**	461	550	561								
006-48-04-36-01-0000-00 0	Major Project	0	0	0								
006-48-04-36-02-0000-00 0	Significant Project											
006-48-04-36-02-2220-00 0	NOAA Grants System	461	550	561		6						
006-48-04-36-03-3010-00 0	Small/other projects and total investment	0	0	0								
	Total, Major Projects for Part 4	0	0	0								
	Total, Significant Projects for Part 4	461	550	561								
	Total, Small/Other Projects for Part 4	0	0	0								
	Total for Part 4	461	550	561								
006-48-05-00-00-0000-00 0	**Part 5: IT Resources Summary**											
006-48-05-99-01-9999-99 0	Total, Major Projects	163945	180926	185365			78333	90542	86553	84812	89472	96831
006-48-05-99-02-9999-99 0	Total, Significant Projects	91926	79872	83117			0	0	0	0	0	0
006-48-05-99-03-9999-99 0	Total, Small/Other Projects	156442	186212	201873			0	0	0	0	0	0
006-48-05-99-99-9999-99 0	Total for the Exhibit	412313	447010	470355			78333	90542	86553	84812	89472	96831

* NCEP Supercomputer is secured behind a firewall system. That firewall system is part of NCEP's overall IT infrastructure. NCEP's security budget is about 5% of its budget. 0
See 006-48-01-12-02-1040-02 NCEP Infrastructure and Office Automation

** No IT Security for GOES N-Q Ground System because GOES N-Q is still in the development phase and has no security costs

Appendix B

Exhibit 300s for NOAA Major Systems

Capital Asset Plan (Exhibit 300) OMB A-11, FY2003 Budget Submission

PART I. A. SUMMARY OF PROJECT INFORMATION For detailed instructions on completing the capital asset plan please see A-11 details section 300 at www.whitehouse.gov/omb					
Agency	Department of Commerce				
Bureau	National Oceanic and Atmospheric Administration				
Account Title	Procurement, Acquisition, and Construction				
Account Identification Code	006-48-1460				
Program Activity	System Acquisition				
Name of Project	Advanced Weather Interactive Processing System				
Unique Project Identifier	006-48-01-12-01-1010-02				
This project is ____ New or __x___ Ongoing					
Project/Useful segment is funded: ___x___ Incrementally _____Fully					
Did the Executive/Investment Review Committee approve funding for this project this year?	Yes	x	No		
Did the CFO review the cost goal?	Yes	X	No		
Did the Procurement Executive review the acquisition strategy?	Yes	X	No		
Is this project information technology (see Section 53.2 for a definition)?	Yes	x	No		
For information technology projects *only*. (The CIO must review)					
a. Is this Project a Financial Management System (see section 53.2 for a definition)?	Yes		No	x	
If so, does this project address a FFMIA compliance area?	Yes		No		
If so, which compliance area?					
b. Does this project implement electronic transactions or recordkeeping?	Yes		No	x	
If so, is it included in your GPEA plan?	Yes		No		
c. Was a privacy impact assessment performed on this project?	Yes		No	X	
d. Does the security of this project meet the requirements of the Government Information Security Reform Act (GISRA)?	Yes	X	No		
e. Were any weaknesses identified for this project in the annual program review or independent evaluation?	Yes		No	X	

B. SUMMARY OF SPENDING FOR PROJECT STAGES

(In Millions)

	FY00 and Earlier	FY01	FY02	FY03	FY04	FY05	FY06	FY07+ Beyond	Total
Planning									
Budget Authority									
Outlays									
Full Acquisition									
Budget Authority (PAC)	14.59	16.26	16.26	16.26	14.13	11.89	10.00	8.54	107.95
(ORF)		2.995	3.006	1.723	3.857	6.097	7.987	9.447	35.112
Outlays									
Subtotal (planning and full acquisition) (DME)									
Budget Authority	14.59	19.259	19.27	17.987	17.987	17.987	17.987	17.987	143.054
Outlays									
Maintenance (SS)									
Budget Authority (ORF)		34.323	35.47	37.378	35.244	33.004	31.114	29.654	236.196
Outlays									
Total all phases (DME plus SS)									
Budget Authority		53.582	54.74	55.365	53.231	50.991	49.101	47.641	379.253
Outlays									

C. PROJECT DESCRIPTION

(briefly describe (less than 1/2 page) the general purpose of the project and the expected performance outcome at project completion)

The Advanced Weather Interactive Processing System (AWIPS) is a keystone in the modernized National Weather Service (NWS). Its acquisition supports NOAA's Strategic Plan program element Advance Short-Term Warning and Forecast Services. The collection, communication, processing, display, and analysis of hydrometeorological data are fundamental to the conduct of the NWS mission.

According to the Independent Review Team Assessment of Build 5 (14 August 1998, prepared for and at the request of the Deputy Undersecretary for Oceans and Atmosphere, United States Department of Commerce) technology infusion is essential for the future of AWIPS. Technology infusion will allow AWIPS to accommodate the high volume, fine-scale data that are available from advanced satellite sensors, new radars, other ground based automated observing systems, and advanced numerical weather prediction models. It will provide for improved weather warning and forecast services.

Implementation of the AWIPS Technology Infusion initiatives will be accomplished through the AWIPS Evolution LINUX Initiative and Government Provided Software.

PART II: JUSTIFICATION AND OTHER INFORMATION

A. Justification

1. Agency Mission

The National Weather Service (NWS) provides the Nation with as complete, accurate, and timely meteorological and hydrological services as possible within existing scientific, technological, and economic constraints. These services include data collection, data analysis, forecasting, and information dissemination. One of the most important elements of this overall mission is the NWS' responsibility for public warnings and forecasts. The goal of this service is to provide the public with timely and accurate meteorological, hydrological, and oceanographic information for both public safety and planning purposes.

2. Brief Description of Initiative

The Advanced Weather Interactive Processing System (AWIPS) is a keystone in the modernized National Weather Service (NWS). Its acquisition supports NOAA's Strategic Plan program element Advance Short-Term Warning and Forecast Services. The collection, communication, processing, display, and analysis of hydrometeorological data are fundamental to the conduct of the NWS mission.

AWIPS Build 5 will be complete in September 2002 (end of FY02). Build 5 extended the AWIPS functionality to: (1) implement warning decision support tools proven to improve convective storm warning verification and reduce false alarm rates, (2) replace and enable decommissioning of the NEXRAD principle user processor (PUP), and (3) provide productivity enhancing functionality to permit a 69 FTE reduction to authorized field staffing with associated savings of over $4.5 million starting in FY 2003.

According to the Independent Review Team Assessment of Build 5 (14 August 1998, prepared for and at the request of the Deputy Undersecretary for Oceans and Atmosphere, United States Department of Commerce) technology infusion is essential for the future of AWIPS. Technology infusion will allow AWIPS to accommodate the high volume, fine-scale data that are available from advanced satellite sensors, new radars, other ground based automated observing systems, and advanced numerical weather prediction models. It will provide for improved weather warning and forecast services. AWIPS will enable the forecaster to extract meaningful information from data provided and to integrate it with information supplied by NWS guidance centers and other forecast offices. It will assist in the preparation of timely and accurate warning and forecast products for distribution to the public and the media, and it will disseminate those products to the user. AWIPS is an indispensable element in the NWS warning and forecast infrastructure. Therefore, the NWS must ensure its capability keeps pace with planned improvements in observational data and model guidance.

AWIPS Technology Infusion initiatives funded beginning in FY01 include:

Hydromet Decision Assistance: Development and implementation of a suite of automated decision assistance software tools for marine, aviation, winter weather and fire weather. This will enhance monitoring of severe weather occurrences and focus the attention of the forecaster on critical weather events.

Integration of AWIPS to NEXRAD Product Improvements: System upgrades to accommodate new higher volume radar data produced by NEXRAD Product Improvements (ORPG and ORDA).

Data Management Enhancements: System upgrades to improve AWIPS Data Transmission, Storage and Retrieval. This will enable higher volumes of data to be utilized at NWS sites (enhanced model data and higher resolution radar data).

Satellite Broadcast Network Increased Bandwidth: Space Segment expansion and system upgrades to handle expanded data broadcast over AWIPS Satellite Broadcast Network.

NCEP/OCONUS: Software Development and Hardware Upgrades to enhance use of AWIPS at NWS National Centers (NC) and OCONUS sites because of unique NC/OCONUS requirements including advanced display and manipulation of numerical model data on global scales and the ability to acquire, analyze and display data and numerical model sources not presently available.

Catastrophic Backup: Provide redundant Network Control Facility and Master Ground Station to protect NWS Critical Infrastructure.

3. Expected Outcome

The AWIPS technology infusion initiatives combined with high resolution radar data and higher resolution numerical weather models will improve NWS tornado and severe weather warnings. The improved capability will enable NWS to improve its tornado warning goals as follows:

Performance Measures	Probability of Detection	False Alarm Rate	Lead Time
FY2001	.68	73%	
FY2005	.80	55%	15 min

It is expected that once the ORDA deployment is complete, the improvement in warning lead time will be on the order of 17 minutes (based on actual use of experimental NSSL techniques at Weather Forecast Offices.

In addition, AWIPS technology infusion will contribute to improved NWS capabilities that include increasing the probability of detection of winter storms to 90 percent and lead time to 18 hours, improved flash flood warnings, improved precipitation forecasts and improved Aviation and Marine Services.

4. Implementation

Implementation of the AWIPS Technology Infusion initiatives will be accomplished through the AWIPS Evolution LINUX Initiative and Government Provided Software for the Hydromet Decision Assistance and NCEP/OCONUS initiatives. See alternatives analysis below.

B. Program Management

Have you assigned a program manager and contracting officer to this project? If so, what are their names?
Program Manager Name: Paul Nipko
Contracting Officer Name: Sharon Leigh

C. Acquisition Strategy

The acquisition of AWIPS Build 5 will be managed by the program manager within the National Weather Service. Acquisition management includes planning, coordinating, and tracking all development and procurement activities.

Development of Build 5 software will be performed by various NWS and NOAA development organizations while integration and testing will be performed by the prime contractor, PRC Inc.

Presently Development of the AWIPS Evolution LINUX Project will be performed by various NWS and NOAA development organizations while integration and testing will be performed by the prime contractor, PRC Inc. The NWS is analyzing acquisition alternatives for Phase II of the LINUX Project.

D. Alternatives Analysis and risk management

Analysis of Alternatives:

The NWS considered the following alternatives for implementation of the technology infusion initiatives:

a) upgrade current system with newer system components or processing/storage capability

b) migrate components to LINUX based workstations and servers

Alternative a would upgrade the current system by replacing existing system components with newer components produced by the same manufacturer or by upgrading existing system components by adding higher capacity processing and storage modules. While this alternative would increase processing and storage capability, maintenance costs would increase with new system components or with processing upgrades. In addition, while processing would be upgraded, it would not reach the level possible in alternative b at comparable cost. Costs for alternative a would be equal or greater than alternative b. This alternative would continue to limit the AWIPS system to one manufacturer thus limiting flexibility to take advantage of computer technology improvements.

Alternative b would migrate the existing system components to multi-source mass market servers and workstations running the LINUX operating system. Mass market components will provide more processing capability, more storage and more reliability at a fraction of the cost of a same-vendor Unix replacement system for the current AWIPS components. A mass market LINUX workstation provides about 10 times the processing speed and 4 times the storage at 1/4 of the cost of the current AWIPS workstation and 4 times the processing speed at 1/3 the cost of the current direct replacement for the AWIPS workstation. In addition, the LINUX workstation costs less to maintain than the current AWIPS workstation. The AWIPS Evolution LINUX Project would be completed in two phases. The first phase would provide LINUX workstations at each site, provide a LINUX based Communications Processor (which will allow AWIPS

to acquire larger volumes of model data) and add a preprocessor to the data server. The second phase of the evolution would be to migrate the entire AWIPS system to one that is LINUX Based.

Analysis of Risks:

Risk: Migration of AWIPS to mass market components running the LINUX operating system: The Office of Atmospheric Research, Forecast Systems Laboratory has been studying the migration of AWIPS to a LINUX based system for three years. The goal of this effort was to achieve greater hardware independence for the AWIPS system and reduce software dependence on any particular hardware platform. Through this effort, it was found that LINUX based AWIPS software could be run on a number of computer platforms. This has made it possible to achieve AWIPS functionality and better performance on desktop PCs and even laptop computers. It was found that by using a LINUX based system more processing and storage capability could be achieved at a lower cost and with more reliability. The system would provide a cost effective method to achieve the technology infusion goals necessary to allow AWIPS to work with higher volumes of model and radar data and new automated decision assistance tools.

In addition, the Office of Science and Technology has undertaken an AWIPS Evolution LINUX Project. The OST System Engineering Center has completed a First Article Test of an AWIPS LINUX Workstation and is presently conducting an AWIPS LINUX Workstation demo at 14 operational sites. An Operational Demo Report will be available in September 2001.

Risk: Network Control Facility (NCF) and Master Ground Station (MGS) are single points of failure. The NCF and MGS have both been identified as single points of failure within AWIPS. To mitigate this risk and as part of the Government's Critical Infrastructure Protection (CIP) initiative, backup protection for both of these facilities will be provided. The Government has started installation of the backup Master Ground Station. Acquisition and installation of a backup Network Control Facility will take place in FY02 and FY03.

Cost Benefit Analysis:

A formal cost-benefit analysis was not required for this program; however, a 1992 National Institutes of Standards and Technology (NIST) analysis of the costs and benefits of the NWS modernization concluded that the benefits vastly outweighed the costs. Once the modernization is fully deployed, the Nation will realize substantial quantifiable benefits of over $7 billion each year by various segments of the economy such as aviation, agriculture, construction, manufacturing, and transportation. AWIPS is a key component of this modernization.

Build 5 will provide the functionality to enable decommissioning of the NEXRAD principle user processor and reduction of authorized field staffing by 69 FTE with associated savings of over $4.5 million starting in FY 2003. The cost avoidance initiated with these actions will fully offset the cost of development, test and implementation of Build 5 in less than 5 years.

Post Implementation Reviews:

Several reviews were completed following successful fielding of the commissioning release within the $550 million Congressionally imposed funding cap. These are summarized below:

a. Operational Test and Evaluation for AWIPS Build 4.2, The Commissioning Load, October 1999

An Operational Test and Evaluation (OT&E) was conducted May 19, 1999 - June 30, 1999, to evaluate whether the AWIPS Build 4.2 Software is sufficient to commission AWIPS into NWS service operations and to decommission AFOS. The OT&E concluded that AWIPS provided very good forecaster analysis and data presentation tools, and improved forecast/warning operations. Discrepancies noted during OT&E were corrected in AWIPS software release 4.2.3. Follow-on testing verified the effectiveness of the corrective actions in November 1999. AWIPS was commissioned at 140 sites in August 2000.

b. Independent Review AWIPS Build 5 Software Development Cost Estimate by Booz-Allen & Hamilton Inc., August 1998

Booz-Allen & Hamilton (BAH) developed an independent cost estimate for the development, integration, and testing of the AWIPS Build 5 functionality. Based on Source Line of Code estimates developed based on expert judgement, experience and engineering estimates, BAH concluded that the "most likely" cost estimate (50% value) for the AWIPS Build 5 software development is $25.9 million.

c. AWIPS Build 5 and 6: Independent Review Team Assessment by Col. David S Ladwig, United States Air Force, et al August 1998

An independent review of AWIPS Builds 5 and 6 was chartered by the Deputy Under Secretary for Oceans and Atmosphere in conjunction with c above. The finding of the review was that completion and fielding of Build 5 is essential to the core mission of NWS. Further, Build 6 should not proceed until the requirements process for future builds beyond Build 5 is refined. Other findings of the report included that Build 5 should allow NWS to achieve savings of 69 staff positions and that technology infusion is essential for the future and should be funded.

E. Enterprise Architecture (IT Projects Only)

The project is fully compliant with all Federal standards. The project was designed with an open architecture and, thus, can be modified to accommodate future requirements without major segment replacements. AWIPS fully meets ISO 9001 standards. Moreover, the project was designed to substantially utilize available COTS software; software development has been limited to the extent possible. The program conforms with the NWS IT Architecture.

NOAA's IT Architecture documentation can be found on the Internet at http://www.hppcc.noaa.gov/noaaita. Contact Mr. Ira Grossman at (301) 713-3525 ext.140 for the User ID and Password for access to this site.

F. Security and Privacy (IT projects only)

At the request of Chief of the Security Office for NOAA, the National Security Agency conducted an Information Systems Security (INFOSEC) Assessment of AWIPS which was completed with a report to NOAA in March 1999. The report complimented the NWS for their initiatives to provide a good INFOSEC program and made several recommendations. These recommendations lead to the update of the NWS AWIPS Security Plan which was approved by the NOAA Security Officer on 1/25/00.

The estimated percentage of the total investment for FY 2003 associated with IT security is 3.5%.

G. Government Paperwork Elimination Act (GPEA) (IT projects only)

N/A

H. Section 508 (IT Projects only)

1. Does Section 508 Apply? _____Yes (go to question #2)
___x___ No (go to question #3)

2. Yes Section 508 Applies for the technical standards:
_____1194.21 - Software applications and operating systems
_____1194.22 - Web-based Intranet and Internet information and applications
_____1194.23 - Telecommunications products
_____1194.24 - Video and/or Multimedia products
_____1194.25 - Self contained, closed products
_____1194.26 - Desktop and portable computers
_____1194.41 - Information , documentation and support

3. No Section 508 Does Not Apply because of (choose one)
A. Exemption:

_____ 36 CFR 1194.3 (b) A fundamental alteration would be required in the nature of a product or its components *(e.g., adding a large display on a pager or palm pilot would significantly change the size; thus the nature of the product)*

_____36 CFR 1194.3(f) Products will be located in spaces frequented only by service personnel for maintenance, repair or occasional monitoring of equipment
(e.g. telecommunications equipment switches , servers)

___x___ 36 CFR 1194.2(a) Would imposed an undue burden on the agency
(Means significantly difficulty or expense)
Undue Burden documentation is required.

B. Commercial non-available:

_____ 36CFR 1194.2(b) Commercial items are not available that meet applicable technical provisions. Commercial non-available documentation is required.

PART III: COST, SCHEDULE, AND PERFORMANCE GOALS

A. Performance Based Management System (PBMS): Which performance based management system will you use to monitor contract or project progress?

The contract requires the AWIPS prime contractor to maintain a Performance Measurement System (cost/schedule control system) to manage contract performance. The Government uses the PMS to monitor cost, schedule and technical progress of the contract, evaluate the contractor's performance, verify reasonableness of invoices, track costs accrued, and estimate future costs. The contractor is required to break down the entire work effort to small, measurable parts, and plot those parts (work packages) in a time-phased, logically-integrated schedule. Using the earned value concept, the contractor assigns values to the work packages and juxtaposes those values against the schedule, developing a cost/schedule baseline against which progress is measured. Each month, the contractor earns credit (earned value) for the work completed on the work packages and reports this data to the Government. Any cost and/or schedule variances against the baseline are also reflected in the report and variances which exceed certain thresholds require a narrative which addresses causes, impacts, and corrective actions.

B. Original baseline (OMB approved at project outset): Using the format of your selected PBMS, provide the following:

1. What are the cost and schedule goals for this segment or phase of this project? [i.e., what are the project milestones or events, when will each occur; and what is the estimated cost to accomplish each one]

Completed the deployment of AWIPS and the development of AWIPS Release 4.2 by June 1999 within a Congressionally mandated cap of $550 million. Build 5 appropriation revises effort from 2 years to 3 years, completion in September 2002. Technology infusion initiatives begun in FY01 to complete in FY07.

2. What are the measurable performance benefits or goals for this segment or phase of this project? [what are the measurable performance improvements or efficiencies that you expect to achieve with this project?]

See II.A.3

C. Current baseline (applicable only if OMB approved the changes):

1. What are the cost and schedule goals for this segment or phase of the project?

Complete the incremental development of AWIPS as follows:

Build 4
Release 4.2 in May 1999

Build 5
Release 5.0 January 2001
Release 5.1 November 2001
Release 5.2 September 2002

Technology Infusion

Complete the AWIPS Evolution LINUX Project

LINUX evolution Phase I	FY01 - FY03
LINUX evolution Phase II	FY01 - FY05

Complete the software technology infusion initiatives

Hydromet Decision Assist	FY02 - FY07
NCEP OCONUS	FY01 - FY07

Complete Catastrophic Backup initiative

Backup Master Ground Station Operational	FY01
Backup Network Control Facility Operational	FY03

2. What are the measurable performance benefits or goals for this segment or phase of this project?

AWIPS contributes to the accomplishment of the performance measures set for the strategic goals of the NWS. The performance measure shown below is for field release of AWIPS Build 5 and implementation completion of the AWIPS Evolution LINUX project.

AWIPS Performance Measure	FY 01	FY 02	FY 03	FY 04	FY 05	FY 06
AWIPS Build 5	5.0	5.1	5.2			
AWIPS Evolution LINUX			Phase I		Phase II	

AWIPS Milestones	FY Goal
Complete Nationwide deployment	FY 99
Complete development/test of commissionable software	FY 99
Complete WAN upgrade	FY 00
Complete AWIPS Commissioning	FY 00
Complete development of AWIPS Build 5	FY 02
Complete implementation of catastrophic backup protection	FY 03
Complete Phase I AWIPS Evolution LINUX	FY 03
Complete Phase II AWIPS Evolution LINUX	FY 05
Complete Software initiatives	FY 07

D. Actual Performance and Variance from OMB approved baseline:

1. Actual cost and schedule performance. Using the information from your PMBS, explain:
   a. What work you planned (scheduled) to accomplish and how much you budgeted to complete the work.
   b. What you actually accomplished and how much you actually spent.

Build 5 appropriation revises effort from 2 years to 3 years, completion in September 2002
Completion of Build 6 removed from program baseline. Technology Infusion Initiatives begun in 2001

Completion of software development through Build 5 cost an additional $25 million above the previous cost baseline of $550 million.

Technology Infusion initiatives as described beyond Build 5 are estimated to cost through FY07, $84 million.

3. Cost and schedule variance. If either the actual work accomplished or costs incurred vary from your baseline goals by 10 percent or more, explain:

   a. The variance between planned and actual costs or planned and actual schedule, expressed as a percentage of the baseline goal.
   b. The reason for the variance.

   N/A

4. Performance variance. Explain whether, based on work accomplished to date, you still expect to achieve you performance goals. If not, explain the reason for the variance.

   N/A

E. Corrective actions:

If actual work accomplished or costs incurred to date vary from the planned baseline goals by 10 percent or more, explain:
a. What you plan to do, if anything, to correct project performance.
b. What effect your action will have on overall projects cost, schedule, and performance benefits.

Capital Asset Plan (Exhibit 300) OMB A-11, FY2003 Budget Submission

PART I. A. SUMMARY OF PROJECT INFORMATION
For detailed instructions on completing the capital asset plan please see A-11 details section 300 at www.whitehouse.gov/omb

Agency	Department of Commerce
Bureau	National Oceanic and Atmospheric Administration / NESDIS
Account Title	PAC Funding
Account Identification Code	006-48-13 (EC1000)
Program Activity	Information Processing Division
Name of Project	Central Environmental Satellite Computer System (CEMSCS)
Unique Project Identifier	006-48-01-12-01-2015-02

This project is ____ New or ___X__ Ongoing

Project/Useful segment is funded: ___X___ Incrementally _____Fully

Did the Executive/Investment Review Committee approve funding for this project this year?	Yes	X	No	
Did the CFO review the cost goal?	Yes	X	No	
Did the Procurement Executive review the acquisition strategy?	Yes	X	No	
Is this project information technology (see Section 53.2 for a definition)?	Yes	X	No	
For information technology projects *only*. (The CIO must review)				
a. Is this Project a Financial Management System (see section 53.2 for a definition)?	Yes		No	X
If so, does this project address a FFMIA compliance area?	Yes		No	X
If so, which compliance area?				
b. Does this project implement electronic transactions or recordkeeping?	Yes		No	X
If so, is it included in your GPEA plan?	Yes		No	X
c. Was a privacy impact assessment performed on this project?	Yes		No	X
d. Does the security of this project meet the requirements of the Government Information Security Reform Act (GISRA)?	Yes	X	No	
e. Were any weaknesses identified for this project in the annual program review or independent evaluation?	Yes		No	X

B. SUMMARY OF SPENDING FOR PROJECT STAGES

	PY-1 and Earlier	PY	CY	BY	BY+1	BY+2	BY+3	BY+4 Beyond	Total
Planning									
Budget Authority									
Outlays									
Full Acquisition									
Budget Authority									
Outlays		3.597	3.796	4.029	5.554				
Subtotal (planning and full acquisition) (DME)									
Budget Authority									
Outlays		3.597	3.796	4.029	5.554				
Maintenance (SS)									
Budget Authority									
Outlays		6.976	7.393	7.794	7.794				
Total all phases (DME plus SS)									
Budget Authority									
Outlays		10.576	11.189	11.823	13.348				

C. PROJECT DESCRIPTION

(briefly describe (less than 1/2 page) the general purpose of the project and the expected performance outcome at project completion)

The Central Environmental Satellite Computer System (CEMSCS) is operated by the NESDIS Office of Satellite Data Processing and Distribution and is NOAA=s primary data-processing system for the Nation=s environmental satellite data. CEMSCS ingests, processes, and distributes, and archives environmental data and information received from all of NOAA=s satellites, several foreign countries satellites and the Department of Defense=s satellites. The software systems residing on the IT equipment produce several thousand products per day and are required on a 24-hour-per-day-7-day-per-week basis. The products and services are critical to the protection of life and property within the United States as well as for our international forecast and warning partners. The hardware and software systems require routine monitoring and maintenance as well as the enhancement of existing systems as new spacecraft are launched or more effective programming languages and tools become available.

The CEMSCS contract was competitively awarded in 1996 with the base year and seven option years.

PART II: JUSTIFICATION AND OTHER INFORMATION

A. Justification

The need for this capital project should be demonstrated by answering the following questions:

1. How does this investment support your agency's mission and strategic goals and objectives?

This investment supports the NOAA strategic goal to AAdvance Short Term Warning and Forecast Services@ by providing products from polar and geostationary satellites, enhancing the capabilities to meet the objectives of a modernized National Weather Service (NWS), and to aid forecasters in providing more precise and timely forecasts.

2. Is this investment included in your agency's annual performance plan?

Yes

3. How does this investment support a core or priority function of your agency?

The CEMSCS system maintains a real-time, operational IT processing center that is able to meet the NESDIS mission.

4. Are there any alternative sources,in the public or private sectors,that could perform this function?
   If so,explain why your agency did not select one of these alternatives.

A competitive procurement was conducted in 1996 and Computer Sciences Corporation was selected as the prime contractor.

5. How will this investment reduce costs or improve efficiencies?

Prior to 1996, three (3) different contractors were on-site and these requirements were consolidated into one solicitation. The reasons for a consolidated contract was to improve service and to reduce costs. Our service to our customers was suffering because it was taking too long to respond to systems outages and it was taking too long to develop new software systems.

B. Program Management

Have you assigned a program manager and contracting officer to this project? If so, what are their names?

Program Manager - Barbara Banks Contracting Officer - Helene Kram

C. Acquisition Strategy

Explain how your acquisition strategy will manage or mitigate projects risks:

1. Will you use a single contract or several contracts to accomplish this project? If multiple contracts are planned,
   explain how they are related to each other, and how each supports the project performance goals.

Single contract was awarded in 1996

2. What type(s)of contract will you use (e.g. cost reimbursement, fixed-price, etc.)?

Cost plus award fee

3. Will you use financial incentives to motivate contractor performance (e.g. incentive fee, award fee, etc.)?

Award Fee

4. Will you use competition to select suppliers?

Yes, a competition was held to select the Contractor.

5. Will you use commercially available or COTS products, or custom-designed products?

COTS and custom-designed products

D. Alternatives Analysis and risk management

1. Summarize the results of any life-cycle cost analysis performed for this investment, and describe what alternatives you considered and the underlying assumptions.

NESDIS/IPD contracted with GSA=s FEDSIM to perform a Risk Assessment, a Software Applications Optimization Analysis, a Computer Architectural Study, and a Capacity Planning and Forecast Study on the CEMSCS system which indicated our processing growth and archive requirements. FEDSIM also provided NESDIS/IPD with Capacity Planning software that allowed IPD to monitor capacity utilization to ensure careful resource usage and to react to user needs in a carefully planned manner.

2. Summarize the results of any benefit/cost or return on investment analysis of alternatives. (Describe any tangible returns that will benefit your agency even of they are difficult to quantify.)

For all capital equipment purchases the government instructed the Contractor to procure replacements or upgrades to existing functional equipment that was justified as part of the original Requirements Analysis. This equipment is a subset of a large CEMSCS system architecture the analysis of alternative architectures was carried out when NESDIS contracted with GSA's FEDSIM to perform an architectural analysis. The architecture is open and distributed with central management of enterprise assets. The individual pieces of equipment are easily changed out as new technology, requirements and price-performance demand.

3. Describe the results of your risk assessment for this project and discuss your plans to eliminate, mitigate or manage identified risks, e.g. financial, acquisition, technical.

Several alternatives were analyzed for the acquisition strategy including the mechanism of one contractor on-site providing capital equipment and system support services and other contracts with vendors providing other IT services revolving around software maintenance and development. The analysis of alternatives led to the award of a single contract.

4. For IT, explain replaced system savings and savings recovery schedule.

Over the life of the CEMSCS contract it has been and will be necessary to replace a large majority of the equipment because of life cycle retirement, new satellites, additional data processing requirements, and more cost effective hardware available in the market place. In January 1999, the CEMSCS IBM 3090 and 9020 mainframes were replaced with a Year 2000 compliant Amdahl enterprise server with an annual maintenance cost savings of $15,000. In June 1999, the CEMSCS disk storage was replaced with RAID. This resulted in an annual cost savings of $22,800 because the RAID maintenance cost was included in the original purchase price. In addition, in the three years since the purchase of the RAID we have had no hardware failures with this technology.

E. Enterprise Architecture (IT Projects Only)

1. Does this project support your agency's current architecture or is it part of a modernization initiative?

This project contains modernization elements which are called for in our overall enterprise IT architecture.

2. Explain how this project conforms to:
   a. your agency's technology infrastructure; and
   b. the Federal Enterprise Architecture Framework (FEAF),if used for this project. If you are not following the FEAF, explain why and describe which framework you are using.

The project contains all the elements that make up technology infrastructure. CEMSCS enables IPD to perform and meet our business functions. The data that CEMSCS receives, processes, and the products produced support the NESDIS mission. The applications developed and maintained are driven by NESDIS business requirements. The technology portion of our architecture represents the technical components that integrate the data and applications helping us to achieve our mission goals.

CEMSCS follows the NESDIS Architecture framework. There are many accepted frameworks that are used such as the Zachman approach, the Gartner Group approach, or the Index model. In NESDIS we chose to use the accepted process of incorporating elements of each framework that makes sense for the organization. The result is a modified version of all of the above which has been dubbed the AMairs Framework@. This framework was found to be the most amenable for the NESDIS architects in putting together this plan and for future use in evolving the NESDIS architecture.

The NOAA's IT Architecture documentation can be found on the Internet at http://www.hpcc.noaa.gov/noaaita. Contact Mr. Ira Grossman at 301/ 713-3525 ext. 140 for the User ID and Password for access to this site.

F. Security and Privacy (IT projects only)

NOTE: Referring to security plans or other documents is not adequate.

Discuss the security plan for this project and:

1. demonstrate that the costs of security controls are understood and are explicitly incorporated in the life-cycle planning of the overall system, including the additional costs of employing standards and guidance more stringent than those issued by NIST;

Each year IPD has increased the level of spending to support an Increased investment in overall IT security for CEMSCS. In our budget and life cycle planning we allocate funding and resources to support such things as security planning, technical controls, security awareness training and educations as well as incident response handling.

The estimated percentage of the total investment for FY 2003 associated with IT security is 5%.

2. demonstrate how the agency ensures that risks are understood and continually assessed;

IPD has periodically called in third party consultants to perform risk assessments of all of our IT systems. In FY-02 we will have Computer Sciences Corporation perform a risk assessment of our IT systems and help us to develop contingency plans.

3. demonstrate how the agency ensures that the security controls are commensurate with the risk and magnitude of harm;

Based on a previous risk assessment, conducted several years ago, IPD put in place polices, procedures, and mechanisms to address the major vulnerabilities found in our systems. This year IPD will have another risk assessment performed and then develop the appropriate contingency plans.

4. identify additional security controls for systems that promote or permit public access, other externally accessible systems, and those that are interconnected with systems over which program officials have little or no control;

Our first line of defense are the policies, procedures, training, and education that we provide to our staff. The next line of defense are the technical mechanisms (hardware and software) that we have put in place to protect our data and IT resources. We have traditionally taken a host based approach for protecting our systems. Our Networks are designed to segregate the types of traffic that flow throughout our systems. We have put in place monitoring software to help us monitor our systems which include automatic alerts to notify the appropriate staff. We have implemented password protection for our desktop systems as well as incorporate virus detection software to protect user workstations and data.

5. demonstrate how the agency ensures the effective use of security controls and authentication tools to protect privacy for those systems that promote or permit public access; and

Very few of the components that make up CEMSCS are accessed by the general public. For those systems that are, primarily WEB and FTP servers, we do implement controls to ensure that these systems are protected to the best of our ability. One of the first things we do is to provide security training for our system administrations who administer these systems. We develop a standard configuration of services that these systems will support in effort to limit the overall vulnerability of these systems. We regularly back up these systems to protect the integrity of the data content. Public accessed systems are placed on designated network subnets that do not permit connectivity to our other Ainternal@ subnets. IPD actively manages all of the accounts and passwords that we provide to remote and internal users.

6. demonstrate how the agency ensures that the handling of personal information is consistent with relevant government-wide and agency policies.

N/A - CEMSCS does not handle personal information.

G. Government Paperwork Elimination Act (GPEA) (IT projects only)

If this project supports electronic transactions or record keeping, briefly describe the transaction or record keeping functions and how this investment relates to your agency's GPEA plan. Identify any OMB Paperwork Reduction Act control numbers from information collections that are tied to this investment.

If this project supports electronic transactions or record keeping, briefly describe the transaction or record keeping functions and how this investment relates to your agency's GPEA plan. Identify any OMB Paperwork Reduction Act control numbers from information collections that are tied to this investment.

N/A

H. Section 508 (IT Projects only)

1. Does Section 508 Apply? ___X___Yes (go to question #2)
_____ No (go to question #3)

2. Yes Section 508 Applies for the technical standards:
__X___1194.21 - Software applications and operating systems
__ X___1194.22 - Web-based Intranet and Internet information and applications
__ X___1194.23 - Telecommunications products
_____1194.24 - Video and/or Multimedia products
_____1194.25 - Self contained, closed products
__X_ __1194.26 - Desktop and portable computers
__X ___1194.41 - Information , documentation and support

3. No Section 508 Does Not Apply because of (choose one)
A. Exemption:

_____ 36 CFR 1194.3 (b) A fundamental alteration would be required in the nature of a product or its components *(e.g., adding a large display on a pager or palm pilot would significantly change the size; thus the nature of the product)*

_____36 CFR 1194.3(f) Products will be located in spaces frequented only by service personnel for maintenance, repair or occasional monitoring of equipment
(e.g. telecommunications equipment switches , servers)

_____ 36 CFR 1194.2(a) Would imposed an undue burden on the agency
(Means significantly difficulty or expense)
Undue Burden documentation is required.

B. Commercial non-available:

_____ 36CFR 1194.2(b) Commercial items are not available that meet applicable technical provisions. Commercial non-available documentation is required.

PART III: COST, SCHEDULE, AND PERFORMANCE GOALS

A. Performance Based Management System (PBMS):

Which performance based management system will you use to monitor contract or project progress?

We have developed and are using a Performance Evaluation Plan to monitor contract performance and progress. This plan awards the contractor a fee based on event reports written by the Government Task Monitors (GTM-s).

B. Original baseline (OMB approved at project outset): Using the format of your selected PBMS, provide the following:

1. What are the cost and schedule goals for this segment or phase of this project?
   [i.e., what are the project milestones or events, when will each occur; and what is the estimated cost to accomplish each one]

Project Milestones

CEMSCS upgrades for ROBOTICS	FY02
CEMSCS upgrades for METOP Processing	FY02
Cooperative European METOP Satellite Products Operational	FY04
NPOESS Preparatory Products (NPP)	FY04
METOP Instrument Products Operational (Non-NOAA)	FY04
Next Generation NOAA-N' Products Operational	FY05

2. What are the measurable performance benefits or goals for this segment or phase of this project?
   [what are the measurable performance improvements or efficiencies that you expect to achieve with this project?]

Percent of product delivery

Total annual number of Global Temperature and Water Vapor Profiles collected ATOVS, SSMT1, SSMT2

Total annual number of Global Ocean Surface Winds products

Total annual number of Satellite-derived Low-Level Winds Profiles

Total annual number of Satellite-derived Atmospheric Moisture Profiles

C. Current baseline (applicable only if OMB approved the changes):

Using the format of your selected PBMS, provide the following:

1. What are the cost and schedule goals for this segment or phase of the project?

N/A

2. What are the measurable performance benefits or goals for this segment or phase of this project?

N/A

D. Actual Performance and Variance from OMB approved baseline:

1. Actual cost and schedule performance. Using the information from your PMBS, explain:
   a. What work you planned (scheduled) to accomplish and how much you budgeted to complete the work.
   b. What you actually accomplished and how much you actually spent.

N/A

2. Cost and schedule variance. If either the actual work accomplished or costs incurred vary from your baseline goals by 10 percent or more, explan:
   a. The variance between planned and actual costs or planned and actual schedule, expressed as a percentage of the baseline goal.
   b. The reason for the variance.

N/A

3. Performance variance. Explain whether, based on work accomplished to date, you still expect to achieve your performance goals. If not, explain the reasons for the variance.

N/A

E. Corrective actions:

If actual work accomplished or costs incurred to date vary from the planned baseline goals by 10 percent or more, explain:
   a. What you plan to do, if anything, to correct project performance.
   b. What effect your action will have on overall projects cost, schedule, and performance benefits

N/A

Capital Asset Plan (Exhibit 300) OMB A-11, FY2003 Budget Submission

PART I. A. SUMMARY OF PROJECT INFORMATION For detailed instructions on completing the capital asset plan please see A-11 details section 300 at www.whitehouse.gov/omb	
Agency	Department of Commerce
Bureau	National Oceanic and Atmospheric Administration
Account Title	Procurement, Acquisition, and Construction
Account Identification Code (CLASS)	13x1460
Account Identification Code (EOS)	**TBD**
Program Activity	Environmental Data Management System
Name of Project (CLASS)	Comprehensive Large Array-data Stewardship System (CLASS)
Name of Project (EOS)	Earth Observing System (EOS) Long Term Archive (LTA) {Component to CLASS}
Unique Project Identifier (CLASS)	006-48-01-14-01-2110-02
Unique Project Identifier (EOS)	**TBD**
This project is __x__ New (EOS) or __x__ Ongoing (CLASS)	
Project/Useful segment is funded: ___x___ Incrementally _____Fully	

Did the Executive/Investment Review Committee approve funding for this project this year?	Yes	x	No	
Did the CFO review the cost goal?	Yes	x	No	
Did the Procurement Executive review the acquisition strategy?	Yes	x	No	
Is this project information technology (see Section 53.2 for a definition)?	Yes	x	No	
For information technology projects *only*. (The CIO must review)				
a. Is this Project a Financial Management System (see section 53.2 for a definition)?	Yes		No	x
If so, does this project address a FFMIA compliance area?	Yes		No	
If so, which compliance area?				
b. Does this project implement electronic transactions or record keeping?	Yes	x	No	
If so, is it included in your GPEA plan?	Yes		No	x
c. Was a privacy impact assessment performed on this project?	Yes	x	No	
d. Does the security of this project meet the requirements of the Government Information Security Reform Act (GISRA)?	Yes	x	No	
e. Were any weaknesses identified for this project in the annual program review or independent evaluation?	Yes		No	x

B. SUMMARY OF SPENDING FOR PROJECT STAGES

(In Millions)

	PY-1 and Earlier FY00 and earlier	PY 01	CY 02	BY 03	BY+1 04	BY+2 05	BY+3 06	BY+4 Beyond	Total
Planning									
Budget Authority **CLASS**	N/A**	0.4395							
EOS	N/A	N/A							
Outlays **CLASS**	N/A	0.4395							
EOS	N/A	N/A							
Full Acquisition									
Budget Authority **CLASS**	N/A	1.5555	3.626	3.626	3.626	3.626	3.626	TBD*	TBD
EOS	N/A	N/A	N/A	3	3	1	1	6	14
Outlays **CLASS**	N/A	1.5555							
EOS	N/A	N/A	N/A						
Subtotal (planning and full acquisition) (DME)									
Budget Authority **CLASS**	N/A	1.995	3.626	3.626	3.626	3.626	3.626	TBD	TBD
EOS	N/A	N/A	N/A	3	3	1	1	6	14
Outlays **CLASS**	N/A	1.995							
EOS	N/A	N/A	N/A						
Maintenance (SS)									
Budget Authority **CLASS**									
EOS									
Outlays **CLASS**									
EOS									
Total all phases (DME plus SS)									
Budget Authority **CLASS**	N/A	1.995	3.626	3.626	3.626	3.626	3.626	TBD	TBD
EOS	N/A	N/A	N/A	3	3	1	1		
Outlays **CLASS**	N/A	1.995							
EOS	N/A	N/A	N/A						
N/A Not Applicable** **TBD* To Be Determined**									

C. PROJECT DESCRIPTION

(briefly describe (less than ½ page) the general purpose of the project and the expected performance outcome at project completion)

The purpose of the CLASS Project, including the EOS component, is to enhance NOAA's capability to predict and assess decadal to centennial climatic changes by providing the full suite of environmental data and information archive and access services to the Nation through the effective application of modern, proven techniques and technology. The project places special emphasis on the ability to efficiently archive the vast quantities of NOAA satellite and in situ observational data currently being collected and to be collected; to safely and permanently preserve those valuable data for future generations to use; and to provide rapid data access in a cost-effective manner. Expected performance outcome of the CLASS Project will be greatly enhanced communications capabilities; increased computer storage capabilities; increased computer power, the use of commercially available, modular hardware and software; and improved World Wide Web access to the data and information through new or enhanced database management, search, order, browse, and sub setting techniques. The CLASS project will provide a seamless data archive portal for the Nation.

PART II: JUSTIFICATION AND OTHER INFORMATION

A. Justification

NOAA is the federal agency with statutory responsibility for long-term archiving of the nation's environmental data. As such, NOAA spends almost a billion dollars each year collecting important environmental data in support of its mission to the Nation. NOAA's vast data holdings are collected and stored in various facilities, some of which are responsible for the perpetual stewardship, archiving, and dissemination of environmental data. Today there are significant demands on virtually all of NOAA's programs to provide information to the Nation and the World community on the health of the environment in real-time. For the 21st century, NOAA envisions its data and information products to be available as part of a national decision support system for the purpose of (1) saving lives and protecting property; (2) promulgating public policy; (3) managing and conserving living marine resources; and, (4) enhancing the economic prosperity and quality of life in the United States. All of NOAA's strategic objectives are dependent on the use of extended environmental data and information periods of record. Continued improvement, and the very real economic benefits to our Nation obtained from those improvements, requires continued access to the rapidly increasing volume of historical data. Without current planning and full implementation of CLASS, the future volume of critical data cannot be archived for long-term use and will be lost forever.

A "Statement of Intent" signed by NOAA's Assistant Administrator for Satellite and Information Services for the National Environmental Satellite, Data and Information Service (NESDIS) and NASA's Associate Administrator for the Earth Science Enterprise (ESE) specifically calls for NOAA/NESDIS and NASA/ESE to 1) agree that the NOAA NESDIS Comprehensive Large Array-data Stewardship System (CLASS) shall serve as the national atmospheric and oceanic long-term data archive and 2) agree that appropriate atmospheric and oceanic data records from NASA's Earth Science Enterprise program (i.e., Earth Observing System - EOS) will be included in this national archive.

B. Program Management

Have you assigned a program manager and contracting officer to this project? If so, what are their names?

Program Manager	Contracting Officer
Dave Vercelli	Helene Kram

C. Acquisition Strategy

The CLASS acquisition strategy is two phased. One phase consists of an independent initial system requirements analysis (completed) focused on the current and future large array data sets (e.g., EOS, GOES, POES/DMSP, NPP, NPOESS, NEXRAD, METOP) as well as those in situ data sets being archived at the NOAA National Data Centers (NNDC). Concurrently, a complementary phase (in progress) will incrementally add and upgrade NESDIS existing archive and access systems to handle the high-volumes of constantly flowing data and information. The target architecture goal will be one, which will, through life cycle replacements and upgrades, bring the NNDC under a single archive and access architecture that will be under formal configuration management control. This will allow NESDIS, over time, to eliminate duplication of effort, minimize stand-alone systems, build the infrastructure to accommodate the large array data sets, and to reduce overall operational and system maintenance costs. The next phase is to develop the detailed design for the target architecture and develop, test, and implement a web-based portal, which will demonstrate end-to-end functionality for CLASS through the use of existing functions that are considered candidates for inclusion in the final implementation. Through the extensive use of skilled technical working groups, NESDIS will narrow the acquisition strategy for software development. The Critical Design Documents developed during this phase for the access portal and the CLASS shall be complete to the extent they can be used "as is" by a contractor to accomplish the implementation.

D. Alternatives Analysis and risk management

Plans call for the use of Commercial-Off-The-Shelf (COTS) software where possible to reduce life cycle costs. Existing hardware and software that is in line with CLASS architecture plans will be utilized to ensure maximum benefit and cost reduction to the program. Annual short-term studies will be accomplished to ensure the program is utilizing industry standards and program goals are in-line with industry standard legacy systems and will not be unsupportable in the near future. A refreshment plan for hardware and media will be established to ensure hardware and software are replenished on a cyclical basis to minimize program delays while maximizing cost savings across the CLASS Project, including the EOS component. Focus on using Internet standard protocols for access to NOAA data and information and the distribution of those data and information to the users, it is possible to obtain off-the-shelf solutions for data presentation and access at a much less cost than the prior proprietary solutions of just a few years ago. The CLASS architecture will ensure all systems under the umbrella of the CLASS Project are established within the guidelines of the NOAA NESDIS IT architecture to maximize interoperability and minimize maintenance of numerous disparate systems and that interconnections will be based upon industry standard protocols.

E. Enterprise Architecture (IT Projects Only)

The CLASS Project, including the EOS component, is an integral part of the overall NESDIS enterprise architecture. Each of the organizational elements has an independent set of domain hierarchies under which IT is partitioned. CLASS will become the access and archive foundation for each of the organizational elements. All future IT infrastructures shall conform to the NESDIS template to ensure IT compatibility. The NOAA's IT Architecture documentation can be found on the Internet at http://www.hpoc.noaa.gov/noaaita. Contact Mr. Ira Grossman at 301-713-3525 ext. 140 for the User ID and Password for access to this site.

F. Security and Privacy (IT projects only)

This system will be the primary environmental data and information archive and access system in NOAA. As such, no personnel records will be associated with this system. Sensitive environmental data stored in the system will be maintained In Accordance With (IAW) standing NOAA directives via data record and file-locking methods as are currently employed by the NOAA Data Centers. All data and all applications are backed up and kept at an off-site facility. These security measures are a key component of the NESDIS-wide IT architecture and are fully integrated. Approximately 3-5% of total program cost will be devoted to ensure proper security is developed and maintained. Security measures follow applicable NIST security guidance.

G. Government Paperwork Elimination Act (GPEA) (IT projects only)

The CLASS project will provide for the electronic ingest, storage, and access to environmental data and information. The system will be designed primarily to ingest, archive, and provide access to the data from satellites that are currently in orbit (e.g., GOES, POES) and those that are to be launched over the next several years (e.g., NPP, NPOESS). The design of CLASS will be in accordance with the GPEA guidelines and goals.

H. Section 508 (electronic and information technology)

1. Does Section 508 Apply? ___x___Yes (go to question #2)
_____ No (go to question #3)

2. Yes Section 508 Applies for the technical standards:
_____1194.21 - Software applications and operating systems
___x____1194.22 - Web-based Intranet and Internet information and applications
_____1194.23 - Telecommunications products
_____1194.24 - Video and/or Multimedia products
_____1194.25 - Self contained, closed products
___x____1194.26 - Desktop and portable computers
_____1194.41 - Information , documentation and support

3. No Section 508 Does Not Apply because of (choose one)
A. Exemption:

_____ 36 CFR 1194.3 (b) A fundamental alteration would be required in the nature of a product or its components (e.g., adding a large display on a pager or palm pilot would significantly change the size; thus the nature of the product)

_____36 CFR 1194.3(f) Products will be located in spaces frequented only by service personnel for maintenance, repair or occasional monitoring of equipment (e.g. telecommunications equipment switches , servers)

_____ 36 CFR 1194.2(a) Would imposed an undue burden on the agency (Means significantly difficulty or expense) Undue Burden documentation is required.

B. Commercial non-available
_____ 36 CFR 1194.2(b) Commercial items are not available that meet applicable technical provisions. Commercial non-available documentation is required.

PART III: COST, SCHEDULE, AND PERFORMANCE GOALS

A. Performance Based Management System (PBMS):

Which performance based management system will you use to monitor contract or project progress?

The CLASS program, including the EOS component, will be monitored by NESDIS in terms of achievement or deviation from goals during the program's life cycle. First, to help monitor the performance of this IT project, a commercial project management software package (Microsoft Project) will be used to perform earned value analysis, cost/schedule performance, and budget tracking and oversight. Government and contractor full-time equivalents and associated costs, such as hardware, software, travel and other expenses also will be closely monitored throughout the life cycle of this project. This visibility into the progress of the project will allow both business and technical managers to monitor possible problem areas and take early corrective actions when actual results begin to deviate significantly from plans. Second, NESDIS will perform periodic reviews to ensure the IT project is progressing on schedule and within budget and is satisfying business requirements. A NESDIS Information Management Council, comprised of Office and Center Directors, and the Information Technology Architecture Team will evaluate the progress of the project. The purpose of the reviews will be to identify and correct problems as early in the life cycle as possible to prevent cost overruns. The review will ensure the CLASS project is in-line with the current and planned NESDIS IT infrastructure. It will also ensure that the CLASS project conforms to the NESDIS system development methodology, and will monitor the impact the project has on other NESDIS and NOAA systems, related projects, and the NESDIS IT architecture.

B. Original baseline (OMB approved at project outset): Using the format of your selected PBMS, provide the following:

1. What are the cost and schedule goals for this segment or phase of this project?
   [i.e., what are the project milestones or events, when will each occur; and what is the estimated cost to accomplish each one]

CLASS:
Equipment Development/Enhancement $2.365M Software Development $0.225M Telecommunications Services $0.4M Support $0.636M

EOS:
Equipment Development/Enhancement $1.95M Software Development $0.18M Telecommunications Services $0.33M Support $0.54M

2. What are the measurable performance benefits or goals for this segment or phase of this project?
   [what are the measurable performance improvements or efficiencies that you expect to achieve with this project?]

Implement user portal to access archive records.
Provide on-line access to select set of currently archived environmental data.
Begin archiving select set of EOS data.
Mature NNDC IT architecture.

C. Current baseline (applicable only if OMB approved the changes):

Using the format of your selected PBMS, provide the following:

1. What are the cost and schedule goals for this segment or phase of the project?

Not Applicable

2. What are the measurable performance benefits or goals for this segment or phase of this project?

Not Applicable

D. Actual Performance and Variance from OMB approved baseline:

1. Actual cost and schedule performance. Using the information from your PBMS, explain:
   a. What work you planned (scheduled) to accomplish and how much you budgeted to complete the work.
   b. What you actually accomplished and how much you actually spent.

Program cost and schedule performance is IAW budget and program planning documentation.

2. Cost and schedule variance. If either the actual work accomplished or costs incurred vary from your baseline goals by 10 percent or more, explain:
   a. The variance between planned and actual costs or planned and actual schedule, expressed as a percentage of the baseline goal.
   b. The reason for the variance.

No variances of 10 percent or greater noted.

3. Performance variance. Explain whether, based on work accomplished to date, you still expect to achieve your performance goals. If not, explain the reasons for the variance.

No variances noted, performance goals on track.

E. Corrective actions:

If actual work accomplished or costs incurred to date vary from the planned baseline goals by 10 percent or more, explain:
   a. What you plan to do, if anything, to correct project performance.
   b. What effect your action will have on overall projects cost, schedule, and performance benefits

No corrective actions required.

Capital Asset Plan and Justification

Agency	Department of Commerce									
Bureau	National Oceanic and Atmospheric Administration									
Account Title	Operations Research and Facilities									
Account Identification Code	13X1450									
Unique Project Identifier										
Program Activity										
Name of Project	High Performance Computing and Communications (HPCC) (NOAA Computing Leadership)									
Check One	New Project				Ongoing Project	X				
Was this project approved by an Executive Review Committee or Investment Review Board?							Yes	X	No	
Is this project information technology (see Section 53.2 for a definition?							Yes	X	No	
For information technology projects only:										
Is this Project a Financial Management System (see section 53.2 for a definition)?							Yes		No	X
If so, what percentage of the system is financial?									%	
Does this project implement electronic transactions or record-keeping covered by the Government Paperwork Elimination Act (GPEA)?							Yes		No X	

Note Exhibit 300B is an illustrative format. This information may be provided in a different format, if it is acceptable to your OMB representative and there are no substantive differences in the content.

PART I: SUMMARY OF SPENDING FOR PROJECT STAGES

(In Millions)

	PY-1 and Earlier	PY	CY	BY	BY+1	BY+2	BY+3	BY+4	BY+5& Beyond	Total
Planning										
Budget Authority										0
Outlays										0
Full Acquisition										
Budget Authority	3,000	3,416	3,416	3,416	3,146					16,664
Outlays		3,000	3,416	3,416	3,416	3,416				16,664
Total, sum of stages (excludes maintenance)										
Budget Authority	3,000	3,416	3,416	3,416	3,416	0	0	0	0	16,664
Outlays	0	3,000	3,416	3,416	3,416	3,416	0	0	0	16,664
Maintenance										
Budget Authority						1,258	1,960			3,218
Outlays						1,258	1,960			3,218
Total, All Stages										
Budget Authority	3,000	3,416	3,416	3,416	3,416	1,258	1,960			19,882
Outlays		3,000	3,416	3,416	3,416	4,674	1,960			19,882

Capital Asset Plan and Justification

PART II: JUSTIFICATION AND OTHER INFORMATION

A. Justification

A.1 Integration with Agency mission

The Forecast Systems Laboratory (FSL) was formed October 23, 1988. FSL's primary mission is technology transfer from research and development to operational entities in support of the NOAA Strategic Goal to "Advance Short-Term Warning and Forecast Services". The technology transfer includes meteorological modeling (i.e. Rapid Update Cycle running at NCEP); systems (i.e. WFO-Advanced, the basis for AWIPS data processing and display.); and environmental observation networks (National Profiler Network (NPN)). Additional research is conducted into programming for high performance computers (Scalable Modeling System) as well as other technologies. Operational entities that have benefitted from FSL's technology transfer include the NOAA's National Weather Service(NWS), the DoT's Federal Aviation Administration (FAA), and the Department of Defense. Also, the Central Weather Bureau of Taiwan, the Hungarian Meteorological Service, NASA and NCAR have also entered into collaborations with FSL.

A.2 Long term Strategic Goals and Objectives

To accomplish its mission, FSL set up a computer facility to develop, test and evaluate new, advanced weather forecasting techniques and technologies, and transfer these to operational services. The FSL central facility provides the infrastructure for acquiring, processing, storing, and distributing large volumes of conventional (operational) and advanced meteorological data and products.

A major FSL task involves the development and running in real time of a variety of advanced atmospheric models including the FSL_developed Mesoscale Analysis and Prediction System/Rapid Update Cycle (MAPS/RUC) and Local Analysis and Prediction System/Scalable Forecast Model (LAPS/SFM). An important aspect of the modeling work is the analysis of large volumes of data. Running the prognoses require very substantial amounts of computational power. Early on, FSL realized that massively parallel processors (MPPs) are a cost_effective way to obtain the necessary computing capability. Six years ago, FSL acquired an Intel Paragon XP/S_15 208_processor MPP for the FSL facility to perform compute_intensive tasks. With the Paragon reaching its end of life about two years ago, an interim 32_processor SGI Origin 2000 machine was leased.

Because FSL needed to increase the spatial and temporal resolution of the models it runs, a high_performance computer system (HPCS) was procured. The HPCS is being used to run existing and newly_developed FSL models as well as models developed by other NOAA components and laboratories. Improved computing power permits more detailed models covering larger geographic areas to be developed and tested. The goal for phase 1 of this acquisition is to increase FSL's computing capacity from the existing peak performance of 12.5 GFLOPS to 150 - 250 GFLOPS. In the final phase of this acquisition, after a mid-contract hardware upgrade, the planned target peak performance will be 5 TFLOPS. FSL's environmental models scale to use the available computing power. As more computing power becomes available, the resolution of the model and the complexity of the physics within the model are increased to use the computing resources.

Important tasks to be accomplished on the HPCS will include extensive testing and model runs associated with the NOAA_led North American Atmospheric Observing System (NAOS) and new numerical weather prediction model development.

The NOAA/HPCC budget initiative, "NOAA Computing Leadership Initiative," approved within the FY 1999 budget, addresses these needs through the acquisition of a very large, scalable computer system; the system also includes a Mass Storage System, a storage area network, and communications interfaces.

A.3 Annual Performance Review

Performance on these objectives will be annually reviewed in several ways. Distinct projects will be established with specific goals and funding. Progress on these projects will be reviewed: at the annual Managers Retreat where the managers of all base-funded projects must report on accomplishments and defend future plans, at regular program reviews where half-day presentations are made to and assessed by a committee of senior managers, and through regular individual performance appraisals. There is also a TROIKA established more than 20 years ago and comprising the three NOAA Assistant Administrators for Oceanic and Atmospheric Research (OAR), National Weather Service (NWS), and National Environmental Satellite, Data, and Information Service (NESDIS); progress and future directions are discussed at regular TROIKA meetings, and the TROIKA gives FSL guidance on future directions.

B. Program Management

1. Is there a program manager and contracting officer devoted to the project?	Yes	X	No	
2. Will an Integrated Project Team be established to assist with the Management of the project?	Yes	X	No	

Capital Asset Plan and Justification

C. Acquisition Strategy

The high performance computing (HPC) industry has experienced tremendous changes over the last several years as a result of market changes that include: (1) a greatly reduced focus on the high-end market in favor of the more profitable desktop to midrange systems and (2) a change in HPC programming models away from reliance on very few very powerful custom-made processors to the parallel use of a larger number of cheaper commodity processors to achieve comparable or greater performance on a given application.

Keys to the acquisition strategy that FSL implemented included:

Use a Streamlined Acquisition Process- The Laboratory followed the re-engineered acquisition process known as CONOPS, developed by the Department of Commerce in order to streamline and simplify the procurement process.

Assemble a Procurement Team with Broad Expertise- FSL assembled a CONOPS team with broad expertise by including: Laboratory users with extensive past HPC experience, a NOAA Contracting Officer and DOC legal counsel, outside program representatives, a procurement oversight representative, and an information technology analyst.

Implement a Phased Delivery Strategy to Track Growth in Demand and Cost-Effectiveness- The contract includes a requirement for a phased installation that seeks to track growth in user demand and to take advantage of decreasing hardware costs over time; the initial installation was made in December, 1999, the first upgrade will occur in January, 2001, and a final upgrade will occur in the summer of 2002.

D. Alternatives Analysis and risk management

The NOAA/HPCC budget initiative, "NOAA Computing Leadership Initiative," approved within the FY 1999 budget. The analysis formally considered the following alternatives:

Upgrade the 32-processor SGI Origin/2000 system
Share existing high-performance computing capacity at an existing NOAA/DOC site
Share existing high-performance computing capacity on an existing system at another agency
Procure an HPCS for installation at FSL

The analysis determined that the fourth alternative provided the most favorable benefit-cost ratio.
The report found a conservative estimate of Highly Probable societal benefits for the preferred alternative to be about $573 million. At the time the initiative was written the total expenditure on this alternative was estimated to be $18.5 million (net present value). This results in an estimated benefit/cost ratio of 31:1.

E. IT modernization and architecture (IT projects only)

Key members of FSL IT Management participated in NOAA's efforts to develop an organization-wide IT architecture plan. This participation includes involvement in the preparation of a NOAA-wide IT architecture for its high performance computing domain as well as a parallel architecture planning effort within FSL's line office, Office of Oceanic and Atmospheric Research. FSL will develop its IT Architecture Plan in conjunction with this effort.

Capital Asset Plan and Justification

F. IT Security (IT Projects Only)

A detailed description of the IT security as applies to this asset can be found in security plan for General Support System NOAA3060 (NOAA FSL). A copy of the latest version of the plan (submitted October, 2000) is attached.

G. Government Paperwork Elimination Act (GPEA) (IT Projects Only)

Not applicable.

PART III: COST, SCHEUDLE, AND PERFORMANCE GOALS

A. Description of performance-based system:

The HPCS system includes the following (as minimum requirements):

A computational platform with an initial delivery that is guaranteed to meet stated performance criteria,

At least one upgrade occurring no later than 42 months into the contract,

A Mass Storage System with an initial size of at least 100TBytes, at least nine drives, a final size of at least 250TBytes, and OC_3 connectivity,

A Storage Area Network (SAN) with an initial size of at least 250GBytes and a final size of at least 1TByte, an NFS gateway to the SAN with OC_3 connectivity, a connection to the computational platform, a connection to the Mass Storage System, and at least 10 extra connections available,

At least two OC_3 connections available on computational platform,

Connectivity between the computational platform and an ATM network using LANE 1.0,

Connectivity between the Mass Storage System and an ATM network using LANE 1.0,:

The software defined in the RFP, and

The Mass Storage System must be able to operate in the absence of the HPCS computational platform and the SAN.

In addition to delivering specific hardware and software on a specific schedule, the initial computational platform must be capable of

running the benchmarks (defined in the RFP) in specified times. See “B. Original Baseline” below.

FSL will monitor the achievement or deviation from goals for performance of this system during the life cycle of this project using several approaches, including long-accepted mechanisms for evaluating progress toward research goals that acknowledge the difficulty of precisely defining long-range research objectives.

First, the contract with HPTi required that the delivered system pass an acceptance test. That acceptance test included specific benchmarks (given below in the next section). The acceptance test was conducted in December, 1999, and January, 2000. The new system passed the acceptance test except for one of the benchmarks, the GFST213. This benchmark was identified in the RFP as not being as important as another set of benchmarks; thus, this failure of this single benchmark was not considered to be a significant problem. However, because this benchmark was not passed the Contracting Officer negotiated additional consideration from the vendor, HPTi. The SAN did not pass the acceptance test because SAN software could not be installed on two types of platforms as specified in the RFP. The ports of the CVFS software to Alpha/Linux and Solaris were not in final release by the end of the acceptance period. The delay in the delivery of this software was not considered to be a serious enough problem to delay the acceptance of the rest of the system. However, since this software was not delivered on time, the Contracting Officer negotiated additional consideration from the vendor, HPTi, including a separate acceptance test for the remaining CVFS software. An acceptance test including specific benchmarks will also be run after the two planned upgrades.

Secondly, as an organization within the NOAA line office, OAR, and a key contributor to the NOAA HPCC Program Office, FSL tracks milestones to identify some of the programmatic scientific goals that are central to FSL research and development programs. These milestones are tracked by NOAA Senior Management on a quarterly basis.
Thirdly, as an organization with a long history of high-quality programs and accomplishments that are at the forefront of the weather research community, FSL has an excellent record of publishing the results of its research. The 40 to 50 scientific papers that FSL scientists publish each year are all subject to formal review by their peers within FSL. Many of these go through the formal, external peer review required to publish in scientific journals. In addition, FSL scientists are continually discussing and critiquing each other’s work on a daily basis as a normal part of doing business. FSL management is also constantly evaluating the scientific and computational activities of the Laboratory as one of its primary functions. Finally, OAR conducts an external review of each of its organizations by a formal peer review panel of prominent scientists at least once every four years. FSL most recently underwent an extensive two-day external review of all of its programs in July 1999; a similar formal review of FSL will occur in about five years.

B. Original baseline (OMB approved at Project Outset):

This acquisition was accomplished using CONOPS (Concept of Operations). The CONOPS Project Agreement included both an anticipated schedule and available funding.

Key schedule milestones are:

	Schedule Dates	
	Initial	Current
Tasks/Products	Projection	Projection
HPCS Contract Award	March 1999	September 1999
Initial System Installation	May 1999	November 1999
Acceptance	July/August 1999	January 2000
Interim Upgrade	no specific date	October 2000
Final Upgrade	no specific date	July 2002

The CONOPS Project Agreement showed two funding profiles, one for $19,000k and a second for $15,000k. The first funding profile assumed a base year (FY 1999) expenditure of $3,000k as well as $4,000k expenditures in each of the next four years (FY 2000 through FY 2003). The second funding profile also assumed a base year (FY 1999) expenditure of $3,000k, followed by the same ($3,000k) in each of the next four years (FY 2000 through FY 2003).

In addition to delivering specific hardware and software on a specific schedule, the initial computational platform must be capable of running the benchmarks (defined in the RFP) in no longer than the times indicated in the table below. The performance of the initial system based upon the table is guaranteed by the vendor. In the table below, the middle column percentages are in terms of CPUs. For purposes of this section, CPUs are defined as user_available CPUs. If there are additional CPUs available for I/O or other purposes, they do not count in calculating the percentages of the computational platform. For example, if there are 99 CPUs in a system, then RUC40 may take no longer than 10 minutes on no more than 14 CPUs (15 CPUs is greater than 15% of 99). The additional expenditure of $416k per year will significantly increase this performance.

Capital Asset Plan and Justification

Benchmark	Maximum % of Machine Utilized	Elapsed Wallclock Time
RUC40	15	10 minutes
RUC10	35	280 minutes
SFM_1	15	80 minutes
SFM_2	15	40 minutes
QNH	15	5 minutes
QNHCONUS	35	30 minutes
GFST79	10	5 minutes
GFST213	35	50 minutes

The initially delivered system shall have sufficient memory to concurrently run two copies of all of the above benchmarks without making use of virtual memory. The amount of memory per CPU shall be no less than 128 MBytes.

Key scientific milestones are:

FY2000
Releasing Version 3.0 of the SMS (Scalable Modeling System) which will include the SST (Scalable Spectral Tool). Successfully implement the RUC numerical weather model at a resolution of 10km. Successfully implement the LAPS (Local Analysis and Prediction System) numerical weather model at a resolution of 10km. Successfully implement the QNH (Quasi-nonhydrostatic) numerical weather model at a resolution of 5km on a regional scale.

FY2001
Releasing Version 4.0 of the SMS. Successfully implement of Version 5.0 of the MAPS/RUC (Rapid Update Cycle version of the Mesoscale Analysis and Prediction System) numerical weather model at a resolution of 10km.

FY2002
Releasing Version 5.0 of the SMS.

FY2003
Releasing Version 6.0 of the SMS.

C. Current baseline (applicable only if OMB approved the changes):

Same as shown above.

D. Actual Performance and Variance from OMB approved baseline (Original or Current):

The Interim Upgrade did not occur in October, 2000 as projected in the Current baseline. The current projection is for this to occur in January, 2001, thereby varying from the baseline by more than 10%. It is expected that the final upgrade will occur as scheduled, therefore, the expected performance goals will be achieved by the end of the contract.

Version 2.2.12 of SMS was released which contained SST. The version numbering system was modified.

Capital Asset Plan and Justification

E. Corrective actions:
The originally proposed technology for the interim upgrade is not available at this time. An engineering change proposal (ECP) is expected from the vendor, HPTi, momentarily. The ECP will be evaluated by the Integrated Project Team to assure that performance and schedule will still be for the benefit of the Government. The cost will remain the same.

Capital Asset Plan (Exhibit 300) OMB A-11, FY2003 Budget Submission

PART I. A. SUMMARY OF PROJECT INFORMATION

For detailed instructions on completing the capital asset plan please see A-11 details section 300 at www.whitehouse.gov/omb

Agency	Department of Commerce
Bureau	National Oceanic and Atmospheric Administration
Account Title	PAC and ORF
Account Identification Code	
Program Activity	
Name of Project	GFDL High Performance Computing System
Unique Project Identifier	GFDL Supercomputer

This project is ____ New or ___X_ Ongoing

Project/Useful segment is funded: ___X__ Incrementally _____Fully

Did the Executive/Investment Review Committee approve funding for this project this year?	Yes	X	No	
Did the CFO review the cost goal?	Yes	X	No	
Did the Procurement Executive review the acquisition strategy?	Yes	X	No	
Is this project information technology (see Section 53.2 for a definition)?	Yes	X	No	
For information technology projects *only*. (The CIO must review)				
a. Is this Project a Financial Management System (see section 53.2 for a definition)?	Yes		No	X
If so, does this project address a FFMIA compliance area?	Yes		No	
If so, which compliance area?				
b. Does this project implement electronic transactions or recordkeeping?	Yes		No	X
If so, is it included in your GPEA plan?	Yes		No	
c. Was a privacy impact assessment performed on this project?	Yes		No	X
d. Does the security of this project meet the requirements of the Government Information Security Reform Act (GISRA)?	Yes	X	No	
e. Were any weaknesses identified for this project in the annual program review or independent evaluation?	Yes	X	No	

B. SUMMARY OF SPENDING FOR PROJECT STAGES

(In Millions)

	PY-1 FY00 and Earlier	PY FY01	CY FY02	BY FY03	BY+1 FY04	BY+2 FY05	BY+3 FY06	BY+4 FY07 & Beyond	Total
Planning									
Budget Authority	0.79	0.69	0.71	0.73	0.76	0.76	0.76	0.76	5.96
Outlays	0.79	0.69	0.71	0.73	0.76	0.76	0.76	0.76	5.96
Full Acquisition									
Budget Authority	12.94	10.87	13.20	13.58	12.84	12.84	12.84	12.84	101.95
Outlays	9.99	12.68	14.34	13.58	12.84	12.84	12.84	12.84	101.95
Subtotal (planning and full acquisition) (DME)									
Budget Authority	13.73	11.56	13.90	14.31	13.60	13.60	13.60	13.60	107.90
Outlays	10.78	13.37	15.04	14.31	13.60	13.60	13.60	13.60	107.90
Maintenance (SS)									
Budget Authority	1.96	3.47	4.81	4.62	5.58	5.58	5.58	5.58	41.42
Outlays	1.96	3.47	4.81	4.62	5.58	5.58	5.58	5.58	41.42
Total all phases (DME plus SS)									
Budget Authority	15.69	15.03	18.71	18.93	19.18	19.18	19.18	19.18	145.08
Outlays	12.74	16.84	19.85	18.93	19.18	19.18	19.18	19.18	145.08

C. PROJECT DESCRIPTION

This project provides the computational capability and modeling/infrastructure support that is central to the mission of the Geophysical Fluid Dynamics Laboratory (GFDL). This mission is to expand scientific understanding and improve prediction of the physical processes that govern the behavior of the atmosphere and the ocean by means of mathematical models and complex computer simulations. A primary objective of this project is to provide GFDL with state-of-the-art computing capabilities through the acquisition of a balanced high-performance computing system (HPCS) with contract award to Raytheon Company in September 2000. The HPCS includes very large scalable computing and storage capacity, as well as capabilities for analysis, visualization, networking, and telecommunications. This enhanced computational capability replaces GFDL's previous Cray supercomputers and provides all of the resources needed by GFDL to carry out its computational research. Performance enhancements throughout the life of the project will allow GFDL's scientists to investigate increasingly challenging problems in climate and weather research.

In addition, the Government awarded a contract to RS Information Systems in August 2000 to provide GFDL with model development and infrastructure support services as part of the second element of this project, referred to as Software Development and Technical Support (SDTS). This services provider will help GFDL develop and maintain the new scalable software applications for the enhanced computing environment and will supply other technical support that the Laboratory requires to make most effective use of the state-of-the-art technology being provided under the HPCS contract.

PART II: JUSTIFICATION AND OTHER INFORMATION

A. Justification

Support for agency mission and strategic goals: GFDL's research and model development activities have a major impact on NOAA programs in all three of the NOAA Strategic Plan elements of its portfolio on Prediction and Assessment: short-term forecasts and warnings; implement seasonal to interannual climate forecasts; and predict and assess decadal to centennial changes. Growing national concern about climate change and recent strong El Niño climate events have spurred strong interest for the development of national programs to improve climate prediction capabilities. However, the success of these efforts will depend heavily on physics-based climate modeling and fundamental climate science, two areas in which NOAA/GFDL scientists are among the world's leaders. The state-of-the-art computing and archival capabilities that the new supercomputer system provides is a vital requirement that GFDL scientists must have in order to attack the very difficult problems confronting the climate research community and to support on-going and developing research collaborations within NOAA and with other government agencies, academic institutions, and research centers around the world.

Inclusion in NOAA's Annual Performance Plan: Each year, NOAA's performance plan includes milestones and performance measures for this project to track the program's accomplishments and to measure the progress of the HPCS program.

Investment Supporting a Core NOAA Function: This investment addresses the core mission objectives for prediction and improved understanding of the atmosphere/ocean system that are central to its bureau, the National Oceanic and Atmospheric Administration (NOAA) within the Department of Commerce. Since its founding in 1955, GFDL's primary mission has been to use state-of-the-art supercomputers, computers that are the fastest available at the time, to model and predict the behavior of the Earth's atmosphere and oceans. This project provides continuing support for this mission of the laboratory.

GFDL Mission as an Inherently Governmental Function: Because of the fundamental nature of this research and the long lead-time requirement, these activities are inherently governmental in their character and cannot realistically be accomplished by the private sector. In fact, GFDL research capabilities are quite unique within the government as well and cannot be provided by any other government institution, particularly in the area of decadal-centennial climate research.

The NOAA/HPCC budget initiative, A Computational Challenges in Climate and Weather Research, approved within the FY 2000 budget, addresses these needs through the acquisition of a very large, scalable computer system, leveraged by software support, that will provide the critical computing, storage, analysis, and model development capabilities needed by GFDL to attack some of the most difficult challenges facing the climate and weather modeling community. The FY 2000 budget initiative represents the NOAA contribution to the multi-agency initiative, "IT Initiative for the Twenty-First Century," which seeks increased Federal investments in high-end computing systems and software development to support advanced research projects.

B. Program Management

The program manager is Bruce Ross, who is Deputy Director of NOAA/GFDL. The Contracting Officer is William Voitk, who is a senior contracting officer within the Acquisition Management Division of NOAA's Office of Finance and Acquisition.

C. Acquisition Strategy

The acquisition of GFDL's High Performance Computing System (HPCS) was completed in September 2000, when a contract was awarded to the Raytheon Company to provide computational equipment from Silicon Graphics, complemented by large-scale storage capability from StorageTek. The installation of the initial delivery of these systems was completed in April 2001 with the successful completion of the thirty-day acceptance test. The HPCS contract with Raytheon Company is a three-year, fixed-price contract and only uses commercially available products. The SDTS contract was awarded to RS Information Systems in September 2000. The SDTS contract with RS Information Systems is a five-year, task-order contract. Neither contract involves explicit financial incentives.

For the HPCS procurement, GFDL followed the re-engineered acquisition process known as CONOPS developed by the Department of Commerce in order to streamline and simplify the competitive procurement process. This process was used successfully for the acquisition of two other high performance computing systems in procurements that were carried out in NOAA in FY 1998 and FY 1999. The SDTS contract was awarded as an 8(a) set-aside.

D. Alternatives Analysis and risk management

This project provides the computational capability and modeling/infrastructure support that is central to the mission of the Geophysical Fluid Dynamics Laboratory (GFDL). This mission is to expand scientific understanding and improve prediction of the physical processes that govern the behavior of the atmosphere and the ocean by means of mathematical models and complex computer simulations. A primary objective of this project is to provide GFDL with state-of-the-art computing capabilities through the acquisition of a balanced high-performance computing system (HPCS) with contract award to Raytheon Company in September 2000. The HPCS includes very large scalable computing and storage capacity, as well as capabilities for analysis, visualization, networking, and telecommunications. This enhanced computational capability replaces GFDL's previous Cray supercomputers and provides all of the resources needed by GFDL to carry out its computational research. Performance enhancements throughout the life of the project will allow GFDL's scientists to investigate increasingly challenging problems in climate and weather research.

In addition, the Government awarded a contract to RS Information Systems in August 2000 to provide GFDL with model development and infrastructure support services as part of the second element of this project, referred to as Software Development and Technical Support (SDTS). This services provider will help GFDL develop and maintain the new scalable software applications for the enhanced computing environment and will supply other technical support that the Laboratory requires to make most effective use of the state-of-the-art technology being provided under the HPCS contract.

E. Enterprise Architecture (IT Projects Only)

This project supports the NOAA High Performance Computing Domain (http://www.hpcc.noaa.gov/noaaita/hpc.htm) within the NOAA IT Architecture (http://www.hpcc.noaa.gov/noaaita). It is also compliant with GFDL's IT Architecture (http://www.gfdl.noaa.gov/~jps/noaa_hpc/GFDL_IT-Arch.ver1.html).
Key members of GFDL IT Management are participating in the continued development of the NOAA IT architecture as well as the architecture of GFDL's line office, the Office of Oceanic and Atmospheric Research, OAR (http://www.hpcc.noaa.gov/noaaita/oar.htm). [The NOAA and OAR websites listed above are password-protected for security reasons. Persons interested in accessing these websites should contact Ira Grossman (phone: (301) 713-3525 X140, e-mail: Ira.M.Grossman@noaa.gov).]

The Department of Commerce and NOAA used the Federal Enterprise Architecture Framework to develop their enterprise architecture process, which uses a seven-step Principals and Standards Architecture process that considers four IT Architectural Views. The Department of Commerce also developed and utilizes an IT Architecture Capability Maturity Model. Details of this process are provided at the URL, http://www.hpcc.noaa.gov/docita/.

F. Security and Privacy (IT projects only)

GFDL maintains security controls, described in its security plan, that lab management judges to be an appropriate balance between the need to maintain the security of its programs and its scientists' need for relatively unhindered exchange of scientific information. However, given the increasing cyber-security threats, the laboratory will be working with its HPCS vendor during the next several months to enhance its security controls. The additional expenditures in FY 2002 for one-time network reconfiguration and systems/software acquisition are evident in the "IT Security" supplement of the A-11 Financial Summary, Investments for Information Technology Systems.

Policy statements regarding computer use, world-wide web use, and building security are provided to all new users of the facility, along with new user training and user documentation. Security awareness training and open discussion of system use and security issues are provided as part of computer user meetings, which are scheduled monthly. Key personnel are trained in system administration, security, etc., as required. User training is provided for the use of new hardware and software on an as-needed basis, but particularly at the time of system upgrades.

Review of systems and operations personnel have been made and approved by the line office, OAR, for position sensitivity, and background investigations of personnel have been performed as needed.

The GFDL Scientific Computing Facility (NOAA3070) was one of the first NOAA facilities to receive accreditation, which was signed in July 1993. In 1996, facility accreditation was renewed with the update of the facility's security documentation to reflect the system changes that resulted from the SGI/Cray Research contract that started in 1995. Working with OAR headquarters, GFDL renewed the accreditation of the GFDL facility in March 2001.

Each user that is registered on the Scientific Computing Facility has a unique login ID and password. As a matter of policy, users are prohibited from disclosing their passwords to anyone else and are expected to change their passwords several times each year. Complete guidelines for selecting a password are included in the GFDL Computer User Guide.

A number of physical security measures and oversight provisions are implemented in order to maintain secure round-the-clock operations of the GFDL computing facility every day of the year.

Backup procedures have been established for daily, weekly, and monthly backups of critical system files and all server home directory files. Backup tapes are stored monthly in a location that is physically, electrically, and environmentally separated from the computer building. A full set of system/server history tapes is also stored in an off-site location with replacement of these tapes every six months.

Telnet access requires authentication through a "challenge/response" dialogue using a security device for identification and authentication. This device, which is provided by GFDL to each authorized user for off-site use, is personalized to that user through a unique initialization code and PIN number. In addition, repeated login failures as well as valid logins are logged by the system. Off-site access is logged to an additional log file. These logs are reviewed daily for network intrusion attempts. Unauthorized attempts to gain access to the system are reported to system administrators and GFDL management and, as appropriate, to NOAA security staff.

By policy mandate, users are not permitted to store or exchange confidential or sensitive information on the GFDL Scientific Computing Facility, since the system is intended to be used for scientific research purposes only. The system is intended for use only by GFDL scientists and their collaborators within the climate and weather research community, both inside and outside of NOAA. It is not designed to be accessed by the general public, with the exception of laboratory's unprotected web pages.

The estimated percentage of the FY 2003 investment associated with IT security is 2.1%

G. Government Paperwork Elimination Act (GPEA) (IT projects only)

The research and computing programs associated with this initiative are continuing to evolve toward a paperless office environment in which primary written communication is achieved through office desktop workstations and research information is saved on disk and tape storage media. The use of paper products in this environment will be kept to a minimum. The research computing systems associated with this initiative will not be accessed by the general public and do not require the use of electronic signatures.

H. Section 508 (electronic and information technology)

Most of the equipment and software associated with this project involves “back-office” systems that are not subject to Section 508. The following Section 508 electronic and information technology technical standards are expected to apply to the desktop workstations and web-based user interfaces covered under this project:

1194.21 Software applications and operating systems
1194.22 Web-based intranet and internet information applications
1194.26 Desktop and portable computers

PART III: COST, SCHEDULE, AND PERFORMANCE GOALS

A. Performance Based Management System (PBMS):

GFDL monitors the achievement or deviation from goals during the life cycle of this project using several approaches, including long-accepted mechanisms for evaluating progress toward research goals that acknowledge the difficulty of precisely defining long-range research objectives.

First, the Laboratory has developed explicit performance measures for monitoring the performance of the information technology (IT) projects themselves. Key performance measures for the HPCS start with explicit requirements and deliverables stated in the Request for Proposals. These requirements include measures of hardware and software performance and availability, based on executing GFDL's climate and weather codes. Additionally, the contractor is monitored by means of biweekly meetings between the Government and Contractor to review the status of the HPCS and lab-wide meetings held monthly that provide more general feedback. By these means, contractor and system performance is monitored throughout the year, with a formal evaluation occurring at designated times each year.

Secondly, as an organization within the NOAA line office, OAR, and a key contributor to the NOAA HPCC Program Office, GFDL tracks milestones to identify some of the programmatic scientific goals that are central to GFDL research and development programs. NOAA Senior Management tracks these milestones on a quarterly basis.

Thirdly, as an organization with a long history of high-quality programs and accomplishments that are at the forefront of the climate and weather research community, GFDL has a deeply ingrained ethic of peer review of all of its activities. The 80-100 scientific papers that Laboratory scientists publish each year are all subject to formal review by their peers within the research community. In addition, GFDL scientists are continually discussing and critiquing each other's work on a daily basis as a normal part of doing business. GFDL Management is also constantly evaluating the scientific and computational activities of the Laboratory as one of its primary functions. Finally, OAR conducts an external review of each of its organizations by a formal peer review panel of prominent scientists at least once every four years. GFDL most recently underwent an extensive two-day external review of all of its programs in November 1999.

B. Original baseline (OMB approved at project outset):

GFDL tracks both business and scientific milestones and hardware and software performance measures.

Key business milestones are -

Tasks/Products	Completion Dates: Initial Projection	Completion Dates: Current Projection
HPCS Contract Award	July 2000	September 2000
Initial System Installation	September 2000	December 2000

Key scientific milestones are-
FY2001
Evaluate the capabilities of a more advanced GFDL Hurricane Prediction System for providing improved track forecasts as well as predicting other storm features, such as wind and precipitation fields and changes in storm intensity.

FY2002
Demonstrate progress in improving the capabilities of the next-generation GFDL coupled research model for predicting seasonal-interannual climate and for elucidating some of the processes that control El-Niño-Southern-Oscillation events.

FY2003
Isolate some sources of climate "drift" and define a strategy for reducing their effect on long-running, higher resolution coupled climate models.

FY2004
Provide higher resolution projections of climate change, with improved representations of clouds and ocean circulation, to the impacts research community as part of the 2005 IPCC climate change assessment.

Key performance measures are:

Total user CP hours per month on production system: GFDL's goal is to utilize at least 90% of the production resources available to its scientists. The constraints imposed by scheduling parallel jobs on multiple systems rather than a single large system account for the remaining available processor time.

Total memory used per job: A shift in GFDL's production workload to running fewer larger jobs is expected to increase the per job memory usage from approximately 5 gigabytes presently to approximately 100 gigabytes in FY2003.

Total archived data: The total amount of archived data is expected to increase rapidly as GFDL's production jobs increase both spatial and temporal resolution, since a doubling of spatial resolution can increase the amount of archived data by a factor of 16. Moreover, climate sensitivity studies that require daily, rather than monthly, time averages increase their data storage by a factor of 30. Total storage is expected to reach approximately 200 TB by the end of FY2001 and approximately 1500 TB by the end of FY2003.

Total available archive storage: The current contract calls for an initial archive capacity of 240 TB, increasing tom 2000 TB by the end of FY2003.

Typical archived file size: The typical archived file size is expected to grow even faster than the total archived data because analysis of archived data is greatly simplified with fewer files. The size of a typical archived file is expected to increase from 10 GB in FY2001 to 500 GB in FY2003.

Annual number of analysis applications parallelized: While production jobs are typically large, highly parallelized programs, key insights are gained during the analysis of the data these jobs produce. High performance and a rapid turnaround in the analysis cycle will require parallelization of some of the analysis codes developed at GFDL, typically about 3-4 per year.

Annual number of Flexible Modeling System releases: FMS releases are done on a quarterly basis and require the

C. Current baseline (applicable only if OMB approved the changes):

GFDL completed the procurement for a High Performance Computer System (HPCS) that will replace the previous supercomputer system. The milestones for this procurement are:

	Completion Dates	
Tasks/Products	Initial Projection	Complete
HPCS Contract Award	July 2000	September 2000
Initial System Installation	September 2000	March 2001
System Acceptance	November 2000	April 2001
Annual Performance Review	October 2001	
Mid-life System Enhancements	June 2002	
Annual Performance Review	October 2002	
Annual Performance Review	October 2003	

The scientific milestones and performance goals remain the same as in the original baseline.

D. Actual Performance and Variance from OMB approved baseline:

Due to a worldwide shortage of Application-Specific Integrated Chips (ASICs) required for use in the Silicon Graphics Inc. (sgi) computers, delivery of the computational components of the HPCS originally scheduled for October 2000 could not be completed until January 2001. Three of the ten computers in the HPCS, as well as the SotrageTek (STK) archival storage equipment, were delivered in December 2000. The remaining seven computers were delivered in late January 2001. Integration, testing, and stabilization of this highly complex computing environment delayed the beginning of Acceptance until March 2001. After a 30-day Acceptance period, the HPCS was accepted in April 2001.

E. Corrective actions:

As a consequence of the delay in the delivery of the HPCS computational systems, in June 2001 Raytheon added 256 processors to the 1152 processors initially installed in the GFDL HPCS. These extra processors were originally scheduled to be added to the HPCS in June 2002, and will be in place until that time. GFDL will use these extra processors to recover the computational cycles that were lost during the November 2000 - March 2001 time-frame. These recovered cycles will allow research at GFDL to proceed at the pace anticipated by the original procurement schedule and to meet the scientific milestones and performance measures in the original baseline.

Capital Asset Plan (Exhibit 300) OMB A-11, FY2003 Budget Submission

PART I. A. SUMMARY OF PROJECT INFORMATION

For detailed instructions on completing the capital asset plan please see A-11 details section 300 at www.whitehouse.gov/omb

Agency	Department of Commerce (DOC)
Bureau	National Oceanic and Atmospheric Administration
Account Title	Procurement, Acquisition and Construction (PAC)
Account Identification Code	13X1460
Program Activity	PAC, Satellite Observing Systems (GOES I-M)
Name of Project	Geostationary Operational Environmental Satellite (GOES)
Unique Project Identifier	0006-48-01-12-01-1030

This project is ____ New or ___X__ Ongoing

Project/Useful segment is funded: _____ Incrementally _____X___Fully

Did the Executive/Investment Review Committee approve funding for this project this year?	Yes		No	X
Did the CFO review the cost goal?	Yes		No	X
Did the Procurement Executive review the acquisition strategy?	Yes		No	X
Is this project information technology (see Section 53.2 for a definition)? Satellite: No, Ground System: 20%	Yes		No	X
For information technology projects *only*. (The CIO must review)				
a. Is this Project a Financial Management System (see section 53.2 for a definition)?	Yes		No	X
If so, does this project address a FFMIA compliance area?	Yes		No	
If so, which compliance area?				
b. Does this project implement electronic transactions or recordkeeping?	Yes		No	X
If so, is it included in your GPEA plan?	Yes		No	
c. Was a privacy impact assessment performed on this project?	Yes		No	X
d. Does the security of this project meet the requirements of the Government Information Security Reform Act (GISRA)?	Yes		No	X
e. Were any weaknesses identified for this project in the annual program review or independent evaluation?	Yes	X	No	

B. SUMMARY OF SPENDING FOR PROJECT STAGES

(In Millions)

	2000 and Earlier	2001	2002	2003	2004	2005	2006	2007 and Beyond	Total
Planning									
Budget Authority									
Outlays									
Full Acquisition									
Budget Authority		45.1	12.2	4.1	4.0	3.2	3.2		71.8
Outlays	1,795.3								1,795.3
Subtotal (planning and full acquisition) (DME)									
Budget Authority		45.1	12.2	4.1	4.0	3.2	3.2		71.8
Outlays	1,795.3								1,795.3
Maintenance (SS)									
Budget Authority									
Outlays									
Total all phases (DME plus SS)									
Budget Authority		45.1	12.2	4.1	4.0	3.2	3.2		71.8
Outlays	1,795.3								1,795.3

[1]

[1] 9/7/01

C. PROJECT DESCRIPTION

(briefly describe (less than 1/2 page) the general purpose of the project and the expected performance outcome at project completion)

The GOES I-M satellites are expected to meet NOAA's mission objectives for continuous observations of atmospheric and space environmental phenomena through the year 2007. To meet this mission, NOAA maintains a constellation in the geostationary ring of two operational environmental satellites and, when possible, one on-orbit spare. One GOES satellite is over the East coast and Atlantic Ocean and one is over the West coast, Pacific Ocean, and Hawaii. These satellites provide an uninterrupted flow of data for use by forecasters in the National Weather Service, other Federal, state, and local governments, and private organizations, and in numerical forecast models. As such, GOES satellites are a key component of NOAA's Strategic Plan, Advance Short-term Warning and Forecast Services. This element support the Departments's Strategic Plan Theme I: "Build for the future and promote U.S. competitiveness in the global marketplace, by strengthening and safeguarding the Nation's economic infrastructure." The current acquisition consists of five satellites launched in 1994, 1995, 1997, 2000 and 2001.

PART II: JUSTIFICATION AND OTHER INFORMATION

A. Justification

The need for this capital project should be demonstrated by answering the following questions:

1. How does this investment support your agency's mission and strategic goals and objectives?

GOES satellites are a key component of NOAA's Strategic Plan, Advance Short-term Warning and Forecast Services. This element support the Departments's Strategic Plan Theme I: "Build for the future and promote U.S. competitiveness in the global marketplace, by strengthening and safeguarding the Nation's economic infrastructure."

2. Is this investment included in your agency's annual performance plan?

Yes

3. How does this investment support a core or priority function of your agency?

GOES provides unique benefits because of the frequency of the high resolution, multi-channel observations. High resolution 1 km visible and 4 km infrared observations are provided over nearly half the Earth's disk every three hours, over the Continental United States every 15 minutes, and over special areas every 7½ minutes to observe rapidly developing severe weather. These data provide the only repeated observations of developing severe weather on a continuous basis for input to numerical weather prediction models, hurricane models, and human forecasters in over 121 government Weather Service Offices. GOES observes not only severe weather development, but volcanic events, fire monitoring, and thunderstorm information throughout the day, all day, every day.

4. Are there any alternative sources,in the public or private sectors,that could perform this function?
   If so,explain why your agency did not select one of these alternatives.

No

5. How will this investment reduce costs or improve efficiencies?

GOES data benefit the nation through government-provided forecasts and warnings of weather and flooding, data for private weather companies such as the weather channel, and hundreds of individuals that have their own receiving equipment, throughout all of North, Central, and South America. Warnings and forecasts affect the nation's economic infrastructure through observations and forecasts for commercial aviation, agriculture, coastal zone monitoring, and sea surface temperature monitoring. Numerical products provided from GOES data include measuring temperature and water vapor amounts at various heights in the atmosphere, monitoring where severe weather will develop and tracking winds not only over land, but over the vast ocean areas surrounding the United States.

B. Program Management

Have you assigned a program manager and contracting officer to this project? If so, what are their names?

Program Manager: Steve Kirkner (Acting), NOAA NESDIS Office of Systems Development (OSD)
Satellite Contract Officer: Dick Brooks, NOAA Systems Acquisition Office (SAO)
Ground Systems Contract Officer: Mike Knowles, NOAA Systems Acquisition Office (SAO)

C. Acquisition Strategy

Explain how your acquisition strategy will manage or mitigate projects risks:

1. Will you use a single contract or several contracts to accomplish this project? If multiple contracts are planned, explain how they are related to each other, and how each supports the project performance goals.

Spacecraft and Launch: NASA serves as NOAA's acquisition agent for the procurement of the GOES I-M system. NASA has divided the acquisition into several components and has competed each element with industry. These elements include the procurement of the satellite (which includes the satellite assembly, integration of the instruments and system level testing), procurement of the flight instruments (some of which are government equipment furnished by NASA to the spacecraft vendor and others provided by subcontractors to the prime spacecraft contractor), and procurement of the launch vehicle and services.

Ground System: NOAA issues contracts to maintain and modify the ground system as necessary to accommodate spacecraft changes.

2. What type(s)of contract will you use (e.g. cost reimbursement, fixed-price, etc.)?

Spacecraft and Launch: Due to the many specialized components used in developing an environmental observing satellite and the relatively low production volume of these assets, cost contracts have proven to be most effective and efficient for the government.

Ground System: Acquisitions are conducted through various contract vehicles, usually through fully open competition via request for proposal.

3. Will you use financial incentives to motivate contractor performance (e.g. incentive fee, award fee, etc.)?

Incentive awards apply to some major acquisitions. In general, the satellites and ground system IT component upgrade acquisitions are not structured for incentive awards.

4. Will you use competition to select suppliers?

Acquisitions are conducted through various contract vehicles, usually through fully open competition via request for proposal. COMMITS is used where possible for software support services. For major procurements, RFIs and bidder's conferences are used to perform market research.

5. Will you use commercially available or COTS products, or custom-designed products?

COTS and software reuse are encouraged in all acquisitions. Proposal evaluation criteria include the effective use of COTS and heritage software.

D. Alternatives Analysis and risk management

1. Summarize the results of any life-cycle cost analysis performed for this investment, and describe what alternatives you considered and the underlying assumptions.

Compared to other means such as aircraft, ships and fixed observation platforms, satellites are the most economical means to acquire global data in a timely fashion at medium to high resolution on a daily basis for use in numerical weather forecast models and other environmental monitoring and prediction activities.

2. Summarize the results of any benefit/cost or return on investment analysis of alternatives.
(Describe any tangible returns that will benefit your agency even of they are difficult to quantify.)

NOAA satellites supply 85% of the data that goes into the NWS's numerical analysis models used in the nation's weather broadcasts. Coupled with digital compression technology on the ground, today's satellites are more than 500 times more cost efficient than those built in the 1980s. On average, satellites launched last year were more than twice as powerful as those just five years ago and average 7,000 watts of power. GOES satellites are worth $300M each. The satellite health and safety monitoring as well as telemetry command and control functions of the ground system help ensure that the satellite is kept operational.

3. Describe the results of your risk assessment for this project and discuss your plans to eliminate, mitigate or manage identified risks, e.g. financial, acquisition, technical.

Life cycle studies are in progress to revise the cost of maintaining/storing GOES satellites including procedures for prioritizing GOES satellite enhancements to reduce system risk.

4. For IT, explain replaced system savings and savings recovery schedule.

The life expectancy of a weather satellite is five years. Satellites are launched in advance of the need and placed into a storage orbit until needed to minimize cost and program risk.

E. Enterprise Architecture (IT Projects Only)

1. Does this project support your agency's current architecture or is it part of a modernization initiative?

The GOES satellite control ground system IT architecture was established prior to the launch of the current series of satellites. Each upgrade is in conformance with and is a continuation of established ground system architecture. Refinements to the architecture are applied along with the technological evolution of major component manufacturers (e.g., DEChub vs. ethernet vs. X.25). Major perturbations in the architecture are avoided to save cost in equipment and labor, maximize return on the current investment, and reduce risk to the satellites. The satellite operations portions of the POES and GOES ground systems are built on the same architecture, providing a consistent environment for spacecraft operators and both government and vendor personnel who maintain ground system hardware and software, affording cost efficiencies in the number of personnel required and in their technical skills inventory.

2. Explain how this project conforms to:
   a. your agency's technology infrastructure; and

The GOES satellite control ground system complies with published NESDIS standards on software development and documentation, ground system hardware and cabling, training, human-machine interfaces, and database interfaces. NESDIS writes an annual IT plan. Every ground system procurement must be consistent with this plan to be approved.

b. the Federal Enterprise Architecture Framework (FEAF),if used for this project. If you are not following the FEAF, explain why and describe which framework you are using.

The NESDIS IT Architecture Plan is a living document annually updated. The base architecture was documented for the DOC/NOAA/NESDIS IT architecture efforts completed in June 2000. A Federal Enterprise Architecture Framework (FEAF) was followed. A Technical Reference Model (TRM) was developed in June 2001.

The NOAA's IT Architecture documentation can be found on the Internet at http://www.hpcc.noaa.gov/noaaita. Contact Mr. Ira Grossman at 301 / 713-3525 ext. 140 for the User ID and Password for access to this site.

F. Security and Privacy (IT projects only)

Approximately 0.001% of the FY 2001 GOES budget was spent to ensure proper security is developed and maintained. The majority of IT security functions/software are funded by NOAA orDOC, not by the individual programs/offices.

Satellites and launches: N/A

Ground Systems:

NOTE: Referring to security plans or other documents is not adequate.

Discuss the security plan for this project and:

1. demonstrate that the costs of security controls are understood and are explicitly incorporated in the life-cycle planning of the overall system, including the additional costs of employing standards and guidance more stringent than those issued by NIST;

Many security requirements originate from NIST and implementation of security controls which are more stringent than those of NIST are not sought unless required for national security. Since those instances are rare, NESDIS has minimal need for costing implementations more stringent than NIST standards and guidance. Physical security measures are separately developed by GSA for the new operations facilities (i.e. the SOCC expansion and the NSOF)

2. demonstrate how the agency ensures that risks are understood and continually assessed;

NESDIS is presently in the process of reevaluating security requirements and security controls for all major applications and support systems. NESDIS is generating the new risk assessment using the NOAA supplied TS2000 COTS security plan package as part of the system accreditation process. The GOES risk assessment will be readdressed when GOES N-Q equipment is closer to operational status. Weaknesses identified as a result of recent OSD funded security audits are being prioritized for correction. Penetration testing of the networks is in the planning stages.

3. demonstrate how the agency ensures that the security controls are commensurate with the risk and magnitude of harm;

NESDIS is presently in the process of reevaluating security requirements and security controls for all major applications and support systems. NESDIS is generating the new risk assessment using the NOAA supplied TS2000 COTS security plan package as part of the system accreditation process. The GOES risk assessment will be readdressed when GOES N-Q equipment is closer to operational status.

4. identify additional security controls for systems that promote or permit public access, other externally accessible systems, and those that are interconnected with systems over which program officials have little or no control;

N/A The ground system is a closed system.

5. demonstrate how the agency ensures the effective use of security controls and authentication tools to protect privacy for those systems that promote or permit public access; and

N/A The ground system is a closed system.

6. demonstrate how the agency ensures that the handling of personal information is consistent with relevant government-wide and agency policies.

N/A The ground system is a closed system.

G. Government Paperwork Elimination Act (GPEA) (IT projects only)

If this project supports electronic transactions or record keeping, briefly describe the transaction or record keeping functions and how this investment relates to your agency's GPEA plan. Identify any OMB Paperwork Reduction Act control numbers from information collections that are tied to this investment.

N/A

H. Section 508 (electronic and information technology)

Satellite and Launch:
Does Section 508 Electronic and information technology Accessibility Standards apply? YES _____ NO _X_____ If "Yes", how. If "NO", why not.
Satellites are not considered IT.

Ground Systems:

Does Section 508 Electronic and information technology Accessibility Standards apply? YES __X____ NO ___X___ If "Yes", how. If "NO", why not.

The IT portions of the ground systems, especially those involving a user interface, comply with the Section 508 handicapped accessibility standards. Some ground system subsystems are considered a "back office" product processing system and are kept in a protected area with limited access only by maintenance personnel. Those subsystems are exempt under Part 1194.3f which states that "*...Products located in spaces frequented only by service personnel for maintenance, repair, or occasional monitoring of equipment are not required to comply with this part*."

PART III: COST, SCHEDULE, AND PERFORMANCE GOALS

A. Performance Based Management System (PBMS):

Which performance based management system will you use to monitor contract or project progress?

The award fee process is the primary method NASA/GSFC uses to reward or penalize the prime contractor for performance on the GOES I-M contract. The performance based system on the GOES I-M program is a contract mandated earned value system whereby the prime contractor Space Systems/Loral, for spacecraft and instruments, must provide monthly Performance Measurement System (PMS) Reports. These reports provide, by Work Breakdown Schedule (WBS), the Budgeted Cost of Work Scheduled (BCWS), Budgeted Cost of Work Performed (BCWP), and Actual Cost of Work Performed (ACWP). Current and cumulative variances, budget at completion, and estimate at completion are also included by WBS. In addition the status of Management Reserve is provided for the total contract, and variance analysis reports by cost accounts are submitted and reviewed monthly. These PMS reports are used by GSFC Management to evaluate performance and determine, if necessary, corrective action. Award fee evaluators use the monthly PMS data for determining award fee every 6 months.

Payback is the continuity of environmental products and improved prediction from future satellites for warnings and forecasts of sever weather for the protection of life and property and promotion of the Nation's economic well being.

Metrics to indicate success:
Data continuity, scheduled launches, and health and safety of satellites are metrics. A less than full use of a satellite's capabilities caused by the ground system not being ready to accommodate it, constitute a failure of the ground system; as does the loss of data, the degradation of data quality, or the reduction in the timeliness of product delivery (severe storm warnings, Search and Rescue response).

Without these upgrades current satellites are subjected to increasing risk as the ground system reliability is degraded and future satellites will be launched without any practical means of accessing their improved performance capabilities in speed, accuracy, and sensitivity

Post Implementation Reviews and Actions: NOAA and NASA jointly use performance management information and on-orbit performance of the satellites to ensure that each satellite in the series will meet the mission objectives and requirements for which it was procured. On-orbit anomalies of instruments or spacecraft subsystems are addressed and remedial action is taken, if deemed appropriate, before the launch of the next satellite.

Ground system upgrades are scheduled in accordance with satellite launches. Development projects require a series of reviews, including Requirements Review, Preliminary Design Review, and Critical Design Review. Development projects with multiple build stages require a test and demonstration at the completion of each build. All contracts require weekly and monthly status reports to the COTR.

How are satellite requirements developed?

System requirements are developed through input and close coordination with NOAA's national operational environmental users, e.g., National Weather Service, National Ocean Service, Office of Ocean and Atmospheric Research. In addition, NOAA solicits requirements from the civil user community, the Department of Defense and other public sector users. Requirements are vetted, concept and formulation studies are performed, and an operational requirements document is developed which is the basis for the technical specifications used by the contractors to procure and build the satellite system.

1. How does the satellite procurement strategy ensure requirements are met?

NASA partners with NOAA and is the procurement agent for the GOES satellites. NOAA and NASA hold preliminary design and detailed design reviews for the spacecraft, satellite instruments and ground components comprising the entire satellite system. These reviews focus on how a component developer (contractor) complies with technical specifications and operational requirements. Each component must successfully complete a detailed design review before its development can proceed into the manufacturing and integration and test phases.

Each contract defines measurable performance requirements. Contractors respond with a Performance Verification Matrix, which must be approved by the government, defining how compliance with each requirement is achieved, e.g., test, analysis, heritage. This matrix is closely monitored throughout the review process.

2. How is the actual satellite performance evaluated against requirements?

Prior to shipment of the satellite to the launch site, a formal Pre-ship Review is conducted where all ground test data is reviewed for compliance. All non-compliance waivers to requirements must be agreed to and signed off prior to shipment.

Prior to each launch NOAA and NASA review and revise an On-orbit Verification (OV) plan used to initially test the satellite subsystems and instrument data streams. NASA executes the OV plan during the first 45 days to evaluate system performance against requirements. NOAA accepts the system after successful completion of the OV plan and begins an evaluation of its product systems. Each product derived from the system is monitored by a Product Oversight Panel consisting of research and operations personnel. If a product anomaly reveals a potential problem with the spacecraft or an instrument, an anomaly report is generated for NASA's action.

Satellite on-orbit performance is continually evaluated for the entire design life duration. Based on the government's evaluation of the satellite performance, the contractor receives an on-orbit fee.

3. How does the satellite procurement strategy ensure the use of innovated technology?

An assessment of available technology and associated risks will be made as part of the government's initial concept studies. Additional government insight into technology availability will be achieved through multiple (two or three) formulation studies with industry. Results of both sets of studies will be evaluated prior to finalizing implementation requirements. Since government implementation requirements are stated in terms of performance, ultimately the contractors have final determination on use of innovated technology.

Occasionally, new technologies, at the component level, will be incorporated in an existing satellite series, e.g., solid state recording devices and an upgraded attitude control system are incorporated in NOAA N and N'.

4. How does the satellite procurement strategy ensure effective use of funding and reduce financial and program risk?

NOAA and NASA require the satellite and major instrument contractors to maintain a performance management system based on "Earned Value" concepts. NASA and NOAA hold monthly meetings at the spacecraft contractor site and quarterly meetings with instrument contractors to review their production and financial status. These meetings focus on reviewing information on work completed and comparisons to the planned schedule and cost. In addition, NASA, using a team consisting of personnel from other NASA centers, conducts an annual independent review of the program, which evaluates cost and schedule performance of the program as a whole.

5. How do we identify and implement lessons learned and minimize the risk of repeating past mistakes?

All test discrepancies and on-orbit anomalies are reviewed for possible impact to the performance of subsequent satellites manufactured in a given series. When problems occur NOAA and NASA utilize, Failure review boards, Tiger teams, and Anomaly review teams to sort out the root cause of failures or anomalies that occur during integration and testing or on-orbit. The results of these boards are taken into consideration and corrective action taken on all satellites still in the production line or, in the development of the next series of satellites. Many test discrepancies and on-orbit anomalies become liens against the launch of subsequent satellites. Also, there is a formal process within the performance assurance system which tracks anomalies on other programs. When anomalies are identified as generic on other programs then corrective action will be taken on the GOES programs. All anomalies, must be resolved prior to launch and reported at the NASA Mission Readiness Review before a "GO" for launch is given by both NOAA and NASA.

B. Original baseline (OMB approved at project outset): Using the format of your selected PBMS, provide the following:

1. What are the cost and schedule goals for this segment or phase of this project?
[i.e., what are the project milestones or events, when will each occur; and what is the estimated cost to accomplish each one]

Original baseline:

(FY 2000 PRESIDENT's BUDGET)	FY00 & Prior	FY 01	FY 02	FY 03	FY 04	FY 05	FY 06	FY 07 & Beyond	Total
	1,802.1	58.6	16.0	11.4	9.0	2.2	2.2	0.7	1,902.2
Current baseline:	1,795.3	45.1	12.2	4.1	4.0	3.2	3.2	0.0	1,867.1

See Attachment 1for schedule.

2. What are the measurable performance benefits or goals for this segment or phase of this project?
[what are the measurable performance improvements or efficiencies that you expect to achieve with this project?]

See Attachment 1for performance

C. Current baseline (applicable only if OMB approved the changes):

Using the format of your selected PBMS, provide the following:

1. What are the cost and schedule goals for this segment or phase of the project?

Original baseline:

(FY 2000 PRESIDENT's BUDGET)	FY00 & Prior	FY 01	FY 02	FY 03	FY 04	FY 05	FY 06	FY 07 & Beyond	Total
	1,802.1	58.6	16.0	11.4	9.0	2.2	2.2	0.7	1,902.2
Current baseline:	1,795.3	45.1	12.2	4.1	4.0	3.2	3.2	0.0	1,867.1

See Attachment 1for schedule.

2. What are the measurable performance benefits or goals for this segment or phase of this project?

See Attachment 1for performance

D. Actual Performance and Variance from OMB approved baseline:

1. Actual cost and schedule performance. Using the information from your PMBS, explain:
   a. What work you planned (scheduled) to accomplish and how much you budgeted to complete the work.
   b. What you actually accomplished and how much you actually spent.

Original baseline:

(FY 2000 PRESIDENT's BUDGET)	FY00 & Prior	FY 01	FY 02	FY 03	FY 04	FY 05	FY 06	FY 07 & Beyond	Total
	1,802.1	58.6	16.0	11.4	9.0	2.2	2.2	0.7	1,902.2
Current baseline:	1,795.3	45.1	12.2	4.1	4.0	3.2	3.2	0.0	1,867.1

See Attachment 1for schedule.

GOES 8 and 10 are currently providing operational geostationary coverage. GOES 8 is anticipated to run out of fuel in December 2001 to 2002 timeframe. GOES 10 which was launched in April 1997 was serving as an on-orbit spare until July 1998 when it was placed in operations to replace GOES 9. Due to operational problems, GOES 9 was placed in storage in August 1998 as a spare with limited capability. The GOES 11 was ;launched in May 2000; after checkout it reestablished the constellation with a full-capability on-orbit spare. GOES 8 will be replaced by GOES 11. GOES-12 was launched in August 2001 and was placed in a stand-by orbit. It may be prematurely placed in operational status due to the quality and usefulness of the new Solar X-ray Imager (SXI) instrument onboard.

The ground system must be prepared for the next generation of GOES satellites, N-O-P-Q. If the ground system is determined by NOAA and NASA to be inadequately prepared to support launch and operation of the new satellite series, NOAA will postpone launches, incurring satellite storage expenses and risking the loss of meteorological data due to failed satellites not replaced in a timely fashion.

2. Cost and schedule variance. If either the actual work accomplished or costs incurred vary from your baseline goals by 10 percent or more, explan:
   a. The variance between planned and actual costs or planned and actual schedule, expressed as a percentage of the baseline goal.
   b. The reason for the variance.

Variance is less than one percent.

3. Performance variance. Explain whether, based on work accomplished to date, you still expect to achieve your performance goals. If not, explain the reasons for the variance.

Yes

E. Corrective actions:

If actual work accomplished or costs incurred to date vary from the planned baseline goals by 10 percent or more, explain:
   a. What you plan to do, if anything, to correct project performance.
   b. What effect your action will have on overall projects cost, schedule, and performance benefits

All corrective actions have been incorporated into the current baseline.

Attachment 1
Schedule Milestones and Performance Measures

Schedule Milestones	FY Goal
Professional Support Services (PSS) recompete contract awarded	FY 01/FY01
Replacement OGE product monitor becomes operational	FY02/FY 01
Wallops Backup at GSFC becomes operational - no permission to transmit, license held up because radio stations say that they will be wiped out and FCC is backing them up.	FY02/FY 01
LRIT Upgrades Complete	FY02
Upgrade GIMTACS workstations - requirements definition problem - 3100 does more than Epoch - contractual issue	FY03/FY 01
GOES simulator rehost complete	FY01/FY 01
Telemetry archive complete (GOES Archive Server) (mid Oct 01 latest)	FY02/FY 01
Replacement GIMTACS TACTS becomes operational	FY01/FY 01
DAPS replacement complete	FY 02
TCP/IP Implementation complete (Replacement of X.25 - still doing requirements definition - PSS special project)	FY03/FY 02
GOES M launch	FY01/FY 02
SOCC move to NOAA Satellite Operations Facility starts	FY04/FY 03
SOCC CDA 3C telemetry automation complete	FY 08

The percentage of data that was sent by the satellites recovered by the GOES ground system was 98%, which met the performance measure goal of 98%. No catastrophic failures occurred so downtime was negligible lasting only a few minutes due to equipment redundancy.

GOES Performance Measure*	FY 01	FY 02	FY 03	FY 04	FY05	FY06
# of satellites in operation	2/2	2	2	2	2	2
# of satellite launches	1/1	0	1	0	1	0
# of satellites being maintained in standby/storage orbit	3/1	2/1	2	2	2	2
Data Recovery Rate (%)	98/98	98	98	98	98	98

GOES Performance Measure*	FY 01	FY 02	FY 03	FY 04	FY05	FY06
Maximum continuous downtime (hours)	0/6	6	6	6	6	6

** Very little downtime due equipment redundancy. No major failures. Downtime minutes rounded down to zero hours.*

Capital Asset Plan (Exhibit 300) OMB A-11, FY2003 Budget Submission

PART I. A. SUMMARY OF PROJECT INFORMATION

Agency	Department of Commerce (DOC)
Bureau	National Oceanic and Atmospheric Administration
Account Title	Procurement, Acquisition and Construction (PAC)
Account Identification Code	13X1460
Program Activity	PAC, Satellite Observing Systems (GOES N-Q)
Name of Project	Geostationary Operational Environmental Satellite (GOES)
Unique Project Identifier	0006-48-01-12-01-1081

This project is ____ New or ___X__ Ongoing

Project/Useful segment is funded: _____ Incrementally _____X___Fully

Did the Executive/Investment Review Committee approve funding for this project this year?	Yes		No	X
Did the CFO review the cost goal?	Yes		No	X
Did the Procurement Executive review the acquisition strategy?	Yes		No	X
Is this project information technology (see Section 53.2 for a definition)? Satellite: No, Ground System: 20 %	Yes		No	X
For information technology projects *only*. (The CIO must review)				
a. Is this Project a Financial Management System (see section 53.2 for a definition)?	Yes		No	X
If so, does this project address a FFMIA compliance area?	Yes		No	
If so, which compliance area?				
b. Does this project implement electronic transactions or recordkeeping?	Yes		No	X
If so, is it included in your GPEA plan?	Yes		No	
c. Was a privacy impact assessment performed on this project?	Yes		No	X
d. Does the security of this project meet the requirements of the Government Information Security Reform Act (GISRA)?	Yes	X	No	
e. Were any weaknesses identified for this project in the annual program review or independent evaluation?	Yes		No	X

B. SUMMARY OF SPENDING FOR PROJECT STAGES

(In Millions)

	2000 and Earlier	2001	2002	2003	2004	2005	2006	2007 and Beyond	Total
Planning									
Budget Authority									
Outlays									
Full Acquisition									
Budget Authority		211.6	214.9	208.6	178.1	177.1	84.3	187.0	1,083.7
Outlays	545.4								545.4
Subtotal (planning and full acquisition) (DME)									
Budget Authority		211.6	214.9	208.6	178.1	177.1	84.3	187.0	1,083.7
Outlays	545.4								545.4
Maintenance (SS)									
Budget Authority									
Outlays									
Total all phases (DME plus SS)									
Budget Authority		211.6	214.9	208.6	178.1	177.1	84.3	187.0	1,083.7
Outlays	545.4								545.4

C. PROJECT DESCRIPTION

(briefly describe (less than 1/2 page) the general purpose of the project and the expected performance outcome at project completion)

The GOES-N series satellites are expected to meet NOAA's mission objectives for continuous observations of atmospheric and space environmental phenomena beginning in 2003 and continuing through the year 2015. GOES satellites are crucial elements necessary for the protection of life and property and for the promotion of the Nation's economic welfare. To meet this mission, NOAA maintains a constellation in the geostationary ring of two operational environmental satellites and one on-orbit spare. One GOES satellite is over the East coast and Atlantic Ocean and one is over the West coast, Pacific Ocean, and Hawaii. These data provide an uninterrupted flow of data for use by forecasters in the National Weather Service, other Federal, state, and local governments, and private organizations, and in numerical forecast models. As such, GOES satellites are a key component of NOAA's Strategic Plan, Advance Short-term Warning and Forecast Services. This element supports the Departments's Strategic Plan Theme I: "Build for the future and promote U.S. competitiveness in the global marketplace, by strengthening and safeguarding the Nation's economic infrastructure." The current acquisition consists of up to four satellites, the first of which is planned for launch in 2003.

PART II: JUSTIFICATION AND OTHER INFORMATION

A. Justification

The need for this capital project should be demonstrated by answering the following questions:

1. How does this investment support your agency's mission and strategic goals and objectives?

GOES satellites are a key component of NOAA's Strategic Plan, Advance Short-term Warning and Forecast Services. This element support the Departments's Strategic Plan Theme I: "Build for the future and promote U.S. competitiveness in the global marketplace, by strengthening and safeguarding the Nation's economic infrastructure."

2. Is this investment included in your agency's annual performance plan?

Yes

3. How does this investment support a core or priority function of your agency?

GOES provides unique benefits because of the frequency of the high resolution, multi-channel observations. High resolution 1 km visible and 4 km infrared observations are provided over nearly half the Earth's disk every three hours, over the Continental United States every 15 minutes, and over special areas every 7½ minutes to observe rapidly developing severe weather. These data provide the only repeated observations of developing severe weather on a continuous basis for input to numerical weather prediction models, hurricane models, and human forecasters in over 121 government Weather Service Offices. GOES observes not only severe weather development, but volcanic events, fire monitoring, and thunderstorm information throughout the day, all day, every day.

4. Are there any alternative sources,in the public or private sectors,that could perform this function?
   If so,explain why your agency did not select one of these alternatives.

No

5. How will this investment reduce costs or improve efficiencies?

GOES data benefit the nation through government-provided forecasts and warnings of weather and flooding, data for private weather companies such as the weather channel, and hundreds of individuals that have their own receiving equipment, throughout all of North, Central, and South America. Warnings and forecasts affect the nation's economic infrastructure through observations and forecasts for commercial aviation, agriculture, coastal zone monitoring, and sea surface temperature monitoring. Numerical products provided from GOES data include measuring temperature and water vapor amounts at various heights in the atmosphere, monitoring where severe weather will develop and tracking winds not only over land, but over the vast ocean areas surrounding the United States.

B. Program Management

Have you assigned a program manager and contracting officer to this project? If so, what are their names?

Program Manager: Steve Kirkner (Acting), NOAA NESDIS Office of Systems Development (OSD)
Satellite Contract Officer: Dick Brooks, NOAA Systems Acquisition Office (SAO)
Ground Systems Contract Officer: Mike Knowles, NOAA Systems Acquisition Office (SAO)

C. Acquisition Strategy

Explain how your acquisition strategy will manage or mitigate projects risks:

1. Will you use a single contract or several contracts to accomplish this project? If multiple contracts are planned,
   explain how they are related to each other, and how each supports the project performance goals.

Spacecraft and Launch: NASA serves as NOAA's acquisition agent for the procurement of the GOES-N series. NASA has divided the acquisition into several components and has competed each element with industry. These elements include the procurement of the satellite (which includes the satellite assembly, integration of the instruments, system level testing, launch vehicles, and launch services), and procurement of the flight instruments (which are government equipment furnished by NASA to the spacecraft vendor). Due to the many specialized components used in developing environmental observing instruments and the relatively low production volume of these assets, cost-type contracts have proven to be most effective and efficient for the government for the procurement of Earth observing instruments. For the spacecraft the GOES-N series is structured to maximize the economic leverage residing in the many commercial communication satellite markets. The GOES-N series satellites are procured through a firm fixed price contract which includes the spacecraft and launching as is done for commercial communication satellites. With the larger dollar value procurement elements, NASA's contracts require these vendors to maintain a performance-base management reporting system..

Ground System: Acquisitions are conducted through various contract vehicles, usually through fully open competition via request for proposal. Incentive awards apply to some major acquisitions – the ground system IT component upgrade acquisitions are not structured for incentive awards. COTS and software reuse are encouraged in all acquisitions; proposal evaluation criteria include the effective use of COTS and heritage software.

2. What type(s)of contract will you use (e.g. cost reimbursement, fixed-price, etc.)?

Spacecraft and Launch: Due to the many specialized components used in developing an environmental observing satellite and the relatively low production volume of these assets, cost contracts have proven to be most effective and efficient for the government.

Ground System: Acquisitions are conducted through various contract vehicles, usually through fully open competition via request for proposal.

3. Will you use financial incentives to motivate contractor performance (e.g. incentive fee, award fee, etc.)?

Incentive awards apply to some major acquisitions. In general, the satellites and ground system IT component upgrade acquisitions are not structured for incentive awards.

4. Will you use competition to select suppliers?

Acquisitions are conducted through various contract vehicles, usually through fully open competition via request for proposal. COMMITS is used where possible for software support services. For major procurements, RFIs and bidder's conferences are used to perform market research.

5. Will you use commercially available or COTS products, or custom-designed products?

COTS and software reuse are encouraged in all acquisitions. Proposal evaluation criteria include the effective use of COTS and heritage software.

D. Alternatives Analysis and risk management

1. Summarize the results of any life-cycle cost analysis performed for this investment, and describe what alternatives you considered and the underlying assumptions.

Compared to other means such as aircraft, ships and fixed observation platforms, satellites are the most economical means to acquire global data in a timely fashion at medium to high resolution on a daily basis for use in numerical weather forecast models and other environmental monitoring and prediction activities.

2. Summarize the results of any benefit/cost or return on investment analysis of alternatives. (Describe any tangible returns that will benefit your agency even of they are difficult to quantify.)

NOAA satellites supply 85% of the data that goes into the NWS's numerical analysis models used in the nation's weather broadcasts. Coupled with digital compression technology on the ground, today's satellites are more than 500 times more cost efficient than those built in the 1980s. On average, satellites launched last year were more than twice as powerful as those just five years ago and average 7,000 watts of power. GOES satellites are worth $300M each. The satellite health and safety monitoring as well as telemetry command and control functions of the ground system help ensure that the satellite is kept operational.

3. Describe the results of your risk assessment for this project and discuss your plans to eliminate, mitigate or manage identified risks, e.g. financial, acquisition, technical.

Life cycle studies are in progress to revise the cost of maintaining/storing GOES satellites including procedures for prioritizing GOES satellite enhancements to reduce system risk.

NESDIS is participating in the Geosynchronous Imaging Fourier Transfer Spectrometer (GIFTS) program to prepare for the Advanced Baseline Imager (ABI) and Advanced Baseline Sounder (ABS) instruments planned for the GOES-R series of satellites. NESDIS will support the mission with dedicated X-band reception at the Wallops facility, Level 0 to 1 processing, and archiving of data for post calibration/validation purposes. Wallops will also be the back-up command and control facility.

NESDIS will take over telemetry and control responsibilities for the Advanced Composition Explorer (ACE) from NASA in FY02. Severe geomagnetic storms cause communications problems, abruptly increase drag on spacecraft, and can cause electric utility blackouts over a wide area. The location of ACE at the L1 libration point between the earth and the sun enables ACE to give about a one hour advance warning of impending geomagnetic activity. Simiiliar instruments are planned for the later GOES satellites and this is a good opportunity to gain experience with these instruments before they become operational.

NESDIS may also participate in the METEOSAT program to gain experience in the European method of processing data.

4. For IT, explain replaced system savings and savings recovery schedule.

The life expectancy of a weather satellite is five years. Satellites are launched in advance of the need and placed into a storage orbit until needed to minimize cost and program risk.

E. Enterprise Architecture (IT Projects Only)

1. Does this project support your agency's current architecture or is it part of a modernization initiative?

The GOES satellite control ground system IT architecture was established prior to the launch of the current series of satellites. Each upgrade is in conformance with and is a continuation of established ground system architecture. Refinements to the architecture are applied along with the technological evolution of major component manufacturers (e.g., DEChub vs. ethernet vs. X.25). Major perturbations in the architecture are avoided to save cost in equipment and labor, maximize return on the current investment, and reduce risk to the satellites. The satellite operations portions of the POES and GOES ground systems are built on the same architecture, providing a consistent environment for spacecraft operators and both government and vendor personnel who maintain ground system hardware and software, affording cost efficiencies in the number of personnel required and in their technical skills inventory.

2. Explain how this project conforms to:
   a. your agency's technology infrastructure; and

The GOES satellite control ground system complies with published NESDIS standards on software development and documentation, ground system hardware and cabling, training, human-machine interfaces, and database interfaces. NESDIS writes an annual IT plan. Every ground system procurement must be consistent with this plan to be approved.

   b. the Federal Enterprise Architecture Framework (FEAF),if used for this project. If you are not following the FEAF, explain why and describe which framework you are using.

The NESDIS IT Architecture Plan is a living document annually updated. The base architecture was documented for the DOC/NOAA/NESDIS IT architecture efforts completed in June 2000. A Federal Enterprise Architecture Framework (FEAF) was followed. A Technical Reference Model (TRM) was developed in June 2001.

The NOAA's IT Architecture documentation can be found on the Internet at http://www.hpcc.noaa.gov/noaaita. Contact Mr. Ira Grossman at 301 / 713-3525 ext. 140 for the User ID and Password for access to this site.

F. Security and Privacy (IT projects only)

Approximately 0.001% of the FY 2001 GOES budget was spent to ensure proper security is developed and maintained. The majority of IT security functions/software are funded by NOAA orDOC, not by the individual programs/offices. GOES N-Q will be evaluated against the GISRA standard after the new ground system is delivered.

Satellites and launches: N/A

Ground Systems:

NOTE: Referring to security plans or other documents is not adequate.

Discuss the security plan for this project and:

1. demonstrate that the costs of security controls are understood and are explicitly incorporated in the life-cycle planning of the overall system, including the additional costs of employing standards and guidance more stringent than those issued by NIST;

Many security requirements originate from NIST and implementation of security controls which are more stringent than those of NIST are not sought unless required for national security. Since those instances are rare, NESDIS has minimal need for costing implementations more stringent than NIST standards and guidance. Physical security measures are separately developed by GSA for the new operations facilities (i.e. the SOCC expansion and the NSOF)

2. demonstrate how the agency ensures that risks are understood and continually assessed;

NESDIS is presently in the process of reevaluating security requirements and security controls for all major applications and support systems. NESDIS is generating the new risk assessment using the NOAA supplied TS2000 COTS security plan package as part of the system accreditation process. The GOES risk assessment will be readdressed when GOES N-Q equipment is closer to operational status. Weaknesses identified as a result of recent OSD funded security audits are being prioritized for correction. Penetration testing of the networks is in the planning stages.

3. demonstrate how the agency ensures that the security controls are commensurate with the risk and magnitude of harm;

NESDIS is presently in the process of reevaluating security requirements and security controls for all major applications and support systems. NESDIS is generating the new risk assessment using the NOAA supplied TS2000 COTS security plan package as part of the system accreditation process. The GOES risk assessment will be readdressed when GOES N-Q equipment is closer to operational status.

4. identify additional security controls for systems that promote or permit public access, other externally accessible systems, and those that are interconnected with systems over which program officials have little or no control;

N/A The ground system is a closed system.

5. demonstrate how the agency ensures the effective use of security controls and authentication tools to protect privacy for those systems that promote or permit public access; and

N/A The ground system is a closed system.

6. demonstrate how the agency ensures that the handling of personal information is consistent with relevant government-wide and agency policies.

N/A The ground system is a closed system.

G. Government Paperwork Elimination Act (GPEA) (IT projects only)

If this project supports electronic transactions or record keeping, briefly describe the transaction or record keeping functions and how this investment relates to your agency's GPEA plan. Identify any OMB Paperwork Reduction Act control numbers from information collections that are tied to this investment.

N/A

H. Section 508 (electronic and information technology)

Satellite and Launch:
Does Section 508 Electronic and information technology Accessibility Standards apply? YES _____ NO _X_____ If "Yes", how. If "NO", why not.
Satellites are not considered IT.

Ground Systems:

Does Section 508 Electronic and information technology Accessibility Standards apply? YES __X____ NO ___X___ If "Yes", how. If "NO", why not.

The IT portions of the ground systems, especially those involving a user interface, comply with the Section 508 handicapped accessibility standards. Some ground system subsystems are considered a "back office" product processing system and are kept in a protected area with limited access only by maintenance personnel. Those subsystems are exempt under Part 1194.3f which states that "*...Products located in spaces frequented only by service personnel for maintenance, repair, or occasional monitoring of equipment are not required to comply with this part*."

PART III: COST, SCHEDULE, AND PERFORMANCE GOALS

A. Performance Based Management System (PBMS):

Which performance based management system will you use to monitor contract or project progress?

For the satellite buses, the GOES-N series program has a fixed price performance based contract monitored by scheduled milestone events with its prime spacecraft contractor Boeing Satellite Systems. The milestones include preliminary and critical design reviews for major systems and sub-systems. The contractor does not receive payment for any work towards that milestone until performance is complete. Reviews of current and near term milestones are performed monthly by GSFC management to determine completion status and approve milestone payments.

The performance based system for GOES-N series instruments is a contract mandated earned value system whereby the contractors ITT and Lockheed Martin, must provide monthly Performance Measurement System (PMS) Reports. These reports provide, by Work Breakdown Schedule (WBS), the Budgeted Cost of Work Scheduled (BCWS), Budgeted Cost of Work Performed (BCWP), and Actual Cost of Work Performed (ACWP). Current and cumulative variances, budget at completion, and estimate at completion are also included by WBS. In addition the status of Management Reserve is provided for the total contract, and variance analysis reports by cost accounts are submitted and reviewed monthly. These PMS reports are used by GSFC Management to evaluate performance and determine, if necessary, corrective action. Award fee evaluators use the monthly PMS data for determining award fee every 6 months. The award fee process is the primary method NASA/GSFC uses to reward or penalize the instrument contractors for performance on the GOES-N series program.

Payback is continuity of satellite observations for environmental products and improved prediction of warnings and forecasts of severe weather for the protection of life and property and promotion of the Nation's economic well being.

Metrics to indicate success:
Data continuity, scheduled launches, and health and safety of satellites are metrics. A less than full use of a satellite's capabilities caused by the ground system not being ready to accommodate it, constitute a failure of the ground system; as does the loss of data, the degradation of data quality, or the reduction in the timeliness of product delivery (severe storm warnings, Search and Rescue response).

Without these upgrades current satellites are subjected to increasing risk as the ground system reliability is degraded and future satellites will be launched without any practical means of accessing their improved performance capabilities in speed, accuracy, and sensitivity.

Post Implementation Reviews and Actions: NOAA and NASA jointly use performance management information and on-orbit performance of the satellites to ensure that each satellite in the series will meet the mission objectives and requirements for which it was procured. On-orbit anomalies of instruments or spacecraft subsystems are addressed and remedial action is taken, if deemed appropriate, before the launch of the next satellite.

Ground system upgrades are scheduled in accordance with satellite launches. Development projects require a series of reviews, including Requirements Review, Preliminary Design Review, and Critical Design Review. Development projects with multiple build stages require a test and demonstration at the completion of each build. All contracts require weekly and monthly status reports to the COTR.

How are satellite requirements developed?

System requirements are developed through input and close coordination with NOAA's national operational environmental users, e.g., National Weather Service, National Ocean Service, Office of Ocean and Atmospheric Research. In addition, NOAA solicits requirements from the civil user community, the Department of Defense and other public sector users. Requirements are vetted, concept and formulation studies are performed, and an operational requirements document is developed which is the basis for the technical specifications used by the contractors to procure and build the satellite system.

1. How does the satellite procurement strategy ensure requirements are met?

NASA partners with NOAA and is the procurement agent for the GOES satellites. NOAA and NASA hold preliminary design and detailed design reviews for the spacecraft, satellite instruments and ground components comprising the entire satellite system. These reviews focus on how a component developer (contractor) complies with technical specifications and operational requirements. Each component must successfully complete a detailed design review before its development can proceed into the manufacturing and integration and test phases.

Each contract defines measurable performance requirements. Contractors respond with a Performance Verification Matrix, which must be approved by the government, defining how compliance with each requirement is achieved, e.g., test, analysis, heritage. This matrix is closely monitored throughout the review process.

2. How is the actual satellite performance evaluated against requirements?

Prior to shipment of the satellite to the launch site, a formal Pre-ship Review is conducted where all ground test data is reviewed for compliance. All non-compliance waivers to requirements must be agreed to and signed off prior to shipment.

Prior to each launch NOAA and NASA review and revise an On-orbit Verification (OV) plan used to initially test the satellite subsystems and instrument data streams. NASA executes the OV plan during the first 45 days to evaluate system performance against requirements. NOAA accepts the system after successful completion of the OV plan and begins an evaluation of its product systems. Each product derived from the system is monitored by a Product Oversight Panel consisting of research and operations personnel. If a product anomaly reveals a potential problem with the spacecraft or an instrument, an anomaly report is generated for NASA's action.

Satellite on-orbit performance is continually evaluated for the entire design life duration. Based on the government's evaluation of the satellite performance, the contractor receives an on-orbit fee.

3. How does the satellite procurement strategy ensure the use of innovated technology?

An assessment of available technology and associated risks will be made as part of the government's initial concept studies. Additional government insight into technology availability will be achieved through multiple (two or three) formulation studies with industry. Results of both sets of studies will be evaluated prior to finalizing implementation requirements. Since government implementation requirements are stated in terms of performance, ultimately the contractors have final determination on use of innovated technology.

Occasionally, new technologies, at the component level, will be incorporated in an existing satellite series, e.g., solid state recording devices and an upgraded attitude control system are incorporated in NOAA N and N'.

4. How does the satellite procurement strategy ensure effective use of funding and reduce financial and program risk?

NOAA and NASA require the satellite and major instrument contractors to maintain a performance management system based on "Earned Value" concepts. NASA and NOAA hold monthly meetings at the spacecraft contractor site and quarterly meetings with instrument contractors to review their production and financial status. These meetings focus on reviewing information on work completed and comparisons to the planned schedule and cost. In addition, NASA, using a team consisting of personnel from other NASA centers, conducts an annual independent review of the program, which evaluates cost and schedule performance of the program as a whole.

5. How do we identify and implement lessons learned and minimize the risk of repeating past mistakes?

All test discrepancies and on-orbit anomalies are reviewed for possible impact to the performance of subsequent satellites manufactured in a given series. When problems occur NOAA and NASA utilize, Failure review boards, Tiger teams, and Anomaly review teams to sort out the root cause of failures or anomalies that occur during integration and testing or on-orbit. The results of these boards are taken into consideration and corrective action taken on all satellites still in the production line or, in the development of the next series of satellites. Many test discrepancies and on-orbit anomalies become liens against the launch of subsequent satellites. Also, there is a formal process within the performance assurance system which tracks anomalies on other programs. When anomalies are identified as generic on other programs then corrective action will be taken on the GOES programs. All anomalies, must be resolved prior to launch and reported at the NASA Mission Readiness Review before a "GO" for launch is given by both NOAA and NASA.

B. Original baseline (OMB approved at project outset): Using the format of your selected PBMS, provide the following:

1. What are the cost and schedule goals for this segment or phase of this project?
[i.e., what are the project milestones or events, when will each occur; and what is the estimated cost to accomplish each one]

	FY 00 & Prior	FY 01	FY 02	FY 03	FY 04	FY 05	FY 06	FY 07 & Beyond	Total
Original baseline: (FY 2000 PRESIDENT's BUDGET)	607.0	245.6	226.9	226.3	213.5	324.5	x.x	x.x	2,128.5
Current baseline	545.4	194.6	188.0	181.8	151.3	150.3	57.5	160.2	1,890.3

See Attachment 1for milestones and schedule

2. What are the measurable performance benefits or goals for this segment or phase of this project?
[what are the measurable performance improvements or efficiencies that you expect to achieve with this project?]

See Attachment 1

C. Current baseline (applicable only if OMB approved the changes):

Using the format of your selected PBMS, provide the following:

1. What are the cost and schedule goals for this segment or phase of the project?

	FY 00 & Prior	FY 01	FY 02	FY 03	FY 04	FY 05	FY 06	FY 07 & Beyond	Total
Original baseline: (FY 2000 PRESIDENT's BUDGET)	607.0	245.6	226.9	226.3	213.5	324.5	x.x	x.x	2,128.5
Current baseline	545.4	194.6	188.0	181.8	151.3	150.3	57.5	160.2	1,890.3

See Attachment 1for milestones and schedule

2. What are the measurable performance benefits or goals for this segment or phase of this project?

See Attachment 1

D. Actual Performance and Variance from OMB approved baseline:

1. Actual cost and schedule performance. Using the information from your PMBS, explain:
   a. What work you planned (scheduled) to accomplish and how much you budgeted to complete the work.
   b. What you actually accomplished and how much you actually spent.

	FY 00 & Prior	FY 01	FY 02	FY 03	FY 04	FY 05	FY 06	FY 07 & Beyond	Total
Original baseline: (FY 2000 PRESIDENT's BUDGET)	607.0	245.6	226.9	226.3	213.5	324.5	x.x	x.x	2,128.5
Current baseline	545.4	194.6	188.0	181.8	151.3	150.3	57.5	160.2	1,890.3

See Attachment 1for milestones and schedule

GOES 8 and 10 are currently providing operational geostationary coverage. GOES 8 is anticipated to run out of fuel in December 2001 to 2002 timeframe. GOES 10 which was launched in April 1997 was serving as an on-orbit spare until July 1998 when it was placed in operations to replace GOES 9. Due to operational problems, GOES 9 was placed in storage in August 1998 as a spare with limited capability. The GOES 11 was ;launched in May 2000; after checkout it reestablished the constellation with a full-capability on-orbit spare. GOES 8 will be replaced by GOES 11. GOES-12 was launched in August 2001 and was placed in a stand-by orbit. It may be prematurely placed in operational status due to the quality and usefulness of the new Solar X-ray Imager (SXI) instrument onboard.

The ground system must be prepared for the next generation of GOES satellites, N-O-P-Q. If the ground system is determined by NOAA and NASA to be inadequately prepared to support launch and operation of the new satellite series, NOAA will postpone launches, incurring satellite storage expenses and risking the loss of meteorological data due to failed satellites not replaced in a timely fashion.

2. Cost and schedule variance. If either the actual work accomplished or costs incurred vary from your baseline goals by 10 percent or more, explan:
   a. The variance between planned and actual costs or planned and actual schedule, expressed as a percentage of the baseline goal.
   b. The reason for the variance.

Variance is less than one percent.

3. Performance variance. Explain whether, based on work accomplished to date, you still expect to achieve your performance goals. If not, explain the reasons for the variance.

Yes

E. Corrective actions:

If actual work accomplished or costs incurred to date vary from the planned baseline goals by 10 percent or more, explain:
a. What you plan to do, if anything, to correct project performance.
b. What effect your action will have on overall projects cost, schedule, and performance benefits

All corrective actions have been incorporated into the current baseline.

Attachment 1
Schedule Milestones

GOES Ground System Milestones	FY Goal
GOES NO/P/Q ground systems development begins	FY01/FY 01
GOES NO/P/Q Software Services contract awarded	FY01/FY 01
Professional Support Services (PSS) recompete contract awarded	FY01/FY 01
METEOSAT Data Ingest	FY01
ORA Product Development	Ongoing
ACE Data Ingest	FY 03
DCS CDMA Upgrade	FY03
GOES NO/P/Q ground system - acceptance	FY 03
GIFTS ground system development	FY03
SOCC move to NOAA Satellite Operations Facility starts	FY 03
GOES N launch	FY03
GOES O launch	FY05
GOES P launch	FY07

The percentage of data that was sent by the satellites recovered by the GOES ground system was 98%, which met the performance measure goal of 98%. No catastrophic failures occurred so downtime was negligible lasting only a few minutes due to equipment redundancy.

GOES Performance Measure*	FY 01	FY 02	FY 03	FY 04	FY05	FY06
# of satellites in operation	2/2	2	2	2	2	2
# of satellite launches	1/1	0	1	0	1	0

GOES Performance Measure*	FY 01	FY 02	FY 03	FY 04	FY05	FY06
# of satellites being maintained in standby/storage orbit	3/1	2/1	2	2	2	2
Data Recovery Rate (%)	98/98	98	98	98	98	98
Maximum continuous downtime (hours)	0/6	6	6	6	6	6

** Very little downtime due equipment redundancy. No major failures. Downtime minutes rounded down to zero hours.*

Capital Asset Plan (Exhibit 300) OMB A-11, FY2003 Budget Submission

PART I. A. SUMMARY OF PROJECT INFORMATION For detailed instructions on completing the capital asset plan please see A-11 details section 300 at www.whitehouse.gov/omb				
Agency	Department of Commerce			
Bureau	National Oceanic and Atmospheric Administration			
Account Title	Procurement, Acquisition and Construction (PAC)			
Account Identification Code	006-48-13			
Program Activity	PAC-Central Computer Upgrade			
Name of Project	NCEP Central Computer System (CCS)			
Unique Project Identifier	006-48-01-12-01-1040-02; 006-48-10-13-01-1040-02			
	This project is ____ New or ___X__ Ongoing			
Project/Useful segment is funded: _____ Incrementally _____X__Fully				
Did the Executive/Investment Review Committee approve funding for this project this year?	Yes	✔	No	
Did the CFO review the cost goal?	Yes	✔	No	
Did the Procurement Executive review the acquisition strategy?	Yes	✔	No	
Is this project information technology (see Section 53.2 for a definition)?	Yes	✔	No	
For information technology projects *only*. (The CIO must review)				
a. Is this Project a Financial Management System (see section 53.2 for a definition)?	Yes		No	✔
If so, does this project address a FFMIA compliance area?	Yes		No	
If so, which compliance area?				
b. Does this project implement electronic transactions or recordkeeping?	Yes		No	✔
If so, is it included in your GPEA plan?	Yes		No	
c. Was a privacy impact assessment performed on this project?	Yes		No	✔
d. Does the security of this project meet the requirements of the Government Information Security Reform Act (GISRA)?	Yes	✔	No	
e. Were any weaknesses identified for this project in the annual program review or independent evaluation?	Yes		No	✔

B. SUMMARY OF SPENDING FOR PROJECT STAGES

(In Millions)

	PY-1 and Earlier	PY (2001)	CY (2002)	BY (2003)	BY+1 (2004)	BY+2 (2005)	BY+3 (2006)	BY+4 Beyond	Total
Planning									
Budget Authority									
Outlays									
Full Acquisition									
Budget Authority	23.493	12.050	13.752	20.07	18.20	18.20	19.00	18.20	142.965
Outlays									
Subtotal (planning and full acquisition) (DME)									
Budget Authority									
Outlays									
Maintenance (SS)									
Budget Authority	-1.885	3.035	1.333	1.088	1.08	1.08	1.08	1.08	7.86
Personnel (ORF)		4.772	4.963	5.16	5.16	5.16	5.16	5.16	35.535
Outlays									
Total all phases (DME plus SS)									
Budget Authority (PAC)	21.56	15.085	15.085	21.16	19.28	19.28	20.08	19.28	150.858
Total (PAC and ORF)	21.56	19.857	20.048	26.32	24.44	24.44	25.24	24.24	186.393
Outlays									

Capital Asset Plan (Exhibit 300) OMB A-11, FY2003 Budget Submission

C. PROJECT DESCRIPTION

(briefly describe (less than 1/2 page) the general purpose of the project and the expected performance outcome at project completion)

Through this procurement, the government will acquire a high performance Central Computer System (CCS) to be used by NWS in performing its operational weather and climate forecasting mission for three to nine years. Public weather and climate guidance is issued continuously , 24 hours/day, 7 days/week, 365 days/year, on a strict schedule, based on computer products generated on the CCS operated by NCEP. CCS performance measures of product generation timeliness, raw computational power and system dependability are specified and monthly statistics will be available over the life of the system.

The NCEP Central Computer System (CCS) for Implementation of an Operational Integrated Suite of Climate and Weather Forecasts will provide weather and climate modeling capabilities which are among the core functions of NCEP. These functions support the National Weather Service mission of providing weather, hydrological, and climate forecasts for the protection of life and property and the enhancement of the national economy. This work will significantly advance NOAA's Strategic Goals of (1) Advance Short-Term Warning and Forecast Services and (2) Implement Seasonal To Interannual Climate Forecasts. The CCS supports the following NWS and NCEP Strategic Goals: Improve products and services; Capitalize on scientific and technological advances; and Manage NCEP resources more effectively. The numerical weather prediction and climate forecasting models executed on this high performance computer system will support a range of operational forecast products and services on spatial scales ranging from that of thunderstorms to global circulation patterns and on temporal scales from minutes to multiple seasons. The CCS is consistent with the NOAA and NWS Strategic Plans.

PART II: JUSTIFICATION AND OTHER INFORMATION

A. Justification

The NCEP Central Computer System (CCS) for Implementation of an Operational Integrated Suite of Climate and Weather Forecasts will provide weather and climate modeling capabilities which are among the core functions of NCEP. These functions support the National Weather Service mission of providing weather, hydrological, and climate forecasts for the protection of life and property and the enhancement of the national economy. This work will significantly advance NOAA's Strategic Goals of (1) Advance Short-Term Warning and Forecast Services and (2) Implement Seasonal To Interannual Climate Forecasts. The CCS supports the following NWS and NCEP Strategic Goals: Improve products and services; Capitalize on scientific and technological advances; and Manage NCEP resources more effectively. The numerical weather prediction and climate forecasting models executed on this HPC system will support a range of operational forecast products and services on spatial scales ranging from that of thunderstorms to global circulation patterns and on temporal scales from minutes to multiple seasons. The CCS is consistent with the NOAA and NWS Strategic Plans.

An assessment of NCEP plans with respect to the NWS and to the meteorological community at large is an ongoing process. Each year, NCEP plans are presented to the NWS. Achievement of Strategic Goals and Performance Measures are assessed and evaluated. Program modifications to better meet agency needs are implemented. Every three years a review panel from the University Corporation for Atmospheric Research reviews and evaluates NCEP programs and issues a report and action plan. In addition to these formal reviews, NCEP staff participate in scientific meetings where activities are openly discussed. All these review activities influence NCEP plans and its high performance computer program.

NCEP has developed specific weather and climate forecasting metrics which will be used to monitor this project. These metrics are designed to measure model accuracy in such areas as precipitation and temperature forecast accuracy, elements that are used by nearly every sector of the economy. NCEP anticipates continued steady improvement in forecast accuracy, a trend that has been noted since the beginning of operational numerical weather prediction in the late 1950's, as computational resources are increased and scientists are better able to implement advanced modeling and data assimilation techniques.

In the next several years, the requirements for increased computational resources will be driven by data assimilation and high-resolution ensemble forecasting. Ensemble forecasting involves a statistical combination of several model predictions in order to provide a measure of confidence. A major challenge for data assimilation will be to effectively utilize the planned huge increase in data volume related to the five orders of magnitude increase in satellite data. High resolution ensemble forecasting is expected to play a key role in the development of useful 4 to 5 day hurricane forecasts. Enhanced computing capability, in combination with appropriate observations in the inner-core of hurricanes and improved basic understanding of the physical processes of hurricane intensity change, will also lead to improved hurricane intensity forecasts. This is critical to meet the NWS strategic goal of improving the hurricane wind speed forecasts by 20% in 2005.

Long-range (seasonal) ensemble forecasts with a coupled global ocean-atmosphere model also require increased computational resources and are a critical component for the week 2 to seasonal public forecasts issued by the NCEP Climate Prediction Center. The energy sector is one major customer (i.e., utilities, risk management firms, trade associations, etc.) for these weather and climate forecasts. This sector requires new/improved temperature and precipitation products from one week to seasonal. The products will take the form of new/improved Threats Assessments (e.g., heat & cold extremes) extended to week two, reduced false alarm rate for heat/drought crises, better skill in seasonal outlooks & new long range hydrology products used for river flow & energy production decisions.

PERFORMANCE MEASURES

NCEP Performance Measures	FY 00	FY 01	FY 02	FY 03	FY 04	FY05
Hurricane Prediction System: TPC 72 hour tropical cyclone track forecast error(miles) [1]	221	212	208	205	201	198
Mesoscale Precipitation Forecasting over N. America:						
Day 2/Day 1 (1999) ratio[2]	.89	.91	.93	.95	.99	1.00
Day 3/Day 2 (1999) ratio[2]		.80	.82	.84	.86	.88
Aviation Forecasts, the day forecasts reach their 1980 1-day error level[3]	2.8	2.9	3.0	3.1	3.2	3.3

Climate Forecast, Temperature Skill Score[4]	14	20	21	22	23	24
Climate Forecast, Precipitation Skill Score[4]	6	9	10	11	12	13

NCEP Performance measures were changed to better reflect their basis in Numerical Weather Prediction and to correlate with the performance measures used elsewhere. The numbers above must be considered with some sophistication. In most cases there is a great deal of inter-annual variability (or noise) that interferes with one's ability to note trends or improvements in these statistical performance measures over the short term.

[1]The Tropical Prediction Center (National Hurricane Center) issues forecasts for tropical storm and hurricane tracks at several valid times. The 72 hour forecast is used here because it relates well to the lead time required for coastal evacuation.

[2] The Day2 / Day/1(1999) statistic is the ratio of the skill of the 48 hour forecast in predicting a quarter inch amount of precipitation to the skill of the 24 hour forecast in 1999. Initially, the number is less than 1.0 indicating the longer range Day 2 forecast has less skill than the shorter range Day 1 forecast, but the number is projected to increase to 1.0 by 2005, indicating the Day 2 forecast is as good as the 1999 Day 1 forecast. Day 3 forecasts were initiated in April 2001, taking advantage of the increased computer power of the Phase II upgrade to the IBM SP (NCEP's current high performance computing system). This performance measure is subject to interannual fluctuations. This projected model improvement in precipitation forecast skill is critical to the NWS meeting its strategic goal to attain 1999 Day 2 accuracy at Day 3 in 2005 for the public forecasts.

[3]The Aviation Forecasts are produced with the same global model used to make the medium-range forecasts, but with a shorter data hold. This measure is the day at which the Aviation forecast of 500 mb height is equal to the errors found during 1980 forecasts. In other words, in 2000, NCEP was able to forecast upper air conditions 2.8 days in advance with as little error as a 24 hour forecast in 1980. The Aviation Model is also a critical component of the hurricane prediction system.

[4]The Heidke Skill Score is a measure of forecast skill ranging from -50 to 100 (perfect forecast). It measures the accuracy in probability forecasting in terms of improvement over random chance. The performance measure provided is a three month mean of both temperature and precipitation category forecast accuracy for a lead time of 0.5 months.

Long term strategic goals and objectives

NCEP will employ this high performance system to advance its forecasting capabilities. Specific goals and objectives are outlined below.

Key modeling milestones are as follows:

FY 2003: Transition to CCS
FY2004: Implement T-254/L60 Global Model
Implement 10 km Eta Model
Implement 12 km Hurricane Coupled Ocean Model
Implement 5 km Threats model

B. Program Management

Have you assigned a program manager and contracting officer to this project? If so, what are their names?

Program Manager: Paul Nipko (paul.nipko@noaa.gov) NCEP, NCO
Contracting Officer: William Voitk (william.voitk@noaa.gov) OFA

C. Acquisition Strategy

A full and open competition acquisition is underway. The project will follow the general approach and guidelines established during the CONOPS high performance computer system acquisition projects for NCEP's Class VIII, NOAA's Forecast Systems Laboratory "JET" and the Geophysical Fluid Dynamics Laboratory's HPCS. For NCEP's Class VIII the contractor was required to guarantee a level system availability/reliability and a level of performance, based on NCEP's own benchmark codes, rather than supply a specific hardware/software system. For the CCS a performance based contract is expected, with higher levels of system dependability and performance with respect to the Class VIII. The CCS contract will specify compliance with NCEP's product delivery schedule. The burden of code conversion, if required, will be borne by the contractor.

The acquisition and operation of this high performance computing resource is a very large, multi-year project. The project will be implemented in stages with the goal at each stage to supply the most cost effective computing system resource adequate for the planned evolution of operational weather and climate modeling. This approach will also allow candidate vendors to propose the latest technology (consistent with the commercial-off-the-shelf definition) and to adjust pricing to conform to competitive pressures. Each stage will require the validation of pre-defined performance guarantees.

Once the base three year period of performance is completed annual reviews of proposed system enhancements will be compared with competitive systems by NCEP staff and the Contracting Officer. A performance/price analysis scheme developed by the NOAA High Performance Computing and Communications office for their February 2000 NOAA-wide study will be employed to insure NCEP receives the best possible system for the funding level.

D. Alternatives Analysis and risk management

1. Alternatives:

a. NCEP considered alternatives, including a commercial service. NCEP found that commercial services did not have the computational capability to perform forecasting operations. This is not surprising since the NCEP system is one of the most powerful computer systems in the world and commercial services are geared towards tasks such as web site hosting and database services. Backup of systems similar in performance to NCEP's require the owners to implement their own backup capability (e.g., Charles Schwab, Inc.).

b. Another alternative is to co-exist with some other NOAA high performance computer user (such as the Geophysical Fluid Dynamics Laboratory or Forecast Systems Laboratory). Conflicting mission requirements makes co-existing not practical. NCEP requires the utmost in reliability whereas GFDL and FSL are able to trade off some reliability risk for increased performance. Neither GFDL or FSL manages their system for on-time production of products to support time critical forecasting functions (issuing watches and warnings). A suitable facility to house a combined system has not been located.

c. A "Dual Operations (at two sites) Concept" alternative was considered. It uses the current architecture of the Central Computer System (CCS) supercomputer and splits the resources between two facilities. Operational weather and climate forecast models run on one system; and operational model support/development, quality control (QC), and testing would be run on the other system. Splitting operational weather and/or climate forecast model runs across two systems separated by more than a few meters is not feasible at this time.

Pros (assuming success in "splitting" the system)

1. Provides 100% operational backup (NWP & Climate forecasting) in the event of a facility or system disaster (e.g., fire) assuming sufficient geographical separation.

2. Budget Estimate (thousands of dollars) : in addition to the existing CCS budget.

Recurring system	2,000
Recurring communications	2,000
Recurring facility	500
One time facility upgrade	2,000
Recurring Cost Total	4,500

Recurring costs: disk and storage system, high speed communications between system, facility support.

Cons

1. Eliminates or severely limits NCEP/ Environmental Modeling Center (EMC) model development and enhancements as well as and impacting EMC operational support activities during Operational Backup situations

A. No EMC model development during backup

EMC is continuously developing and testing the next version (model N+1) of most of the NCEP operational models. This part of the NCEP mission would be halted and all new model implementations would be delayed for the duration of the backup operations plus additional startup time of up to several months.

B. Impacts day to day support of operational codes

1.EMC also provides routine support of model "fixes" or "tweeks" utilizing resources which would be limited or not available during backup operations.

2.Fixes to correct errors could be significantly delayed

C. No model diagnostics

Major model problems require extensive reruns of models to ascertain potential or real sources of the problem (e.g. post analysis requirements for the January 24, 2000 East Coast snow event). This requires significant resources that would NOT be available in a backup operation

D. Impacts quality control of model and model output

1.EMC staff provide various aspects of quality control of the model output utilizing resources which would be limited or not available during a backup mode of operation in this scenario.

2.The analysis of long term trends in model performance would be interrupted.

Mitigation

The "cons" stated above could be mitigated by:

Augmenting the Test/Development system to meet NCEP requirements

- add sufficient processing capability to the develop portion of the system to sustain EMC development, and operational support
- estimated cost $3 Million/year additional for more processing capabilities

2. Limits competition for NCEP Central Computer System Acquisition process

A. Dual system concept predicated on clustered architecture (similar to NCEP's IBM SP)

This architecture, and consequently our IBM SP system could possibly support this dual system configuration.

B. Not compatible and likely not cost effective with vector (or other custom) processor system (e.g., Cray, Inc. SV2)

Vector type systems are shared memory systems using much fewer high speed (expensive) processors. This architecture cannot be cost effectively split. Therefore Cray would likely not be a competitor.

C. Difficult to configure with other shared memory systems (e.g., SGI Origin 3000)

Mitigation

There is no practical cost effective mitigation for this impact.

d. Finally, the "status quo" (retaining the current IBM Class VIII, Phase II system) was considered. This alternative does not address NOAA's Strategic Goals for improvement to its Environmental Assessment and Prediction program. Specifically, "Advance Short-Term Warnings and Forecast Services" and "Implement Seasonal to Interannual Climate Forecasts" goals could not be achieved. The entire Class VIII, Phase II system is expected to be saturated by November 2001 when the high resolution Eta model is implemented.

2.Risk Management

The CCS system represents but one more stage in a long series of high performance systems in use at NCEP for more than forty years. The successful acquisition and use of such systems over the years has been maintained in part by rigorous benchmarking procedures. Each candidate vendor will be required to demonstrate system performance using current weather and climate prediction models. Before a contract is awarded candidate systems must demonstrate the ability to preserve the continuity of the models supporting operations at NCEP.

The current high performance computer system, referred to as the Class VIII system, was put under contract in October 1998. The initial delivery (Phase 1) provided a 4.3X increase over NCEP's previous system. A Phase 2 system, completed in April 2001, provides a 40X increase over the previous system, exceeding the contractual guarantee of 30X. Originally, the Class VIII system was to remain on site for a total of four years, the last year being a transition year with only maintenance funds devoted to it. However, changes to the budget profile caused NCEP to recast its plans. A Climate Forecasting element was added for FY 2001 and significant changes in the high performance computing marketplace have led to a non-competitive condition at the highest levels of computing. For these reasons, NCEP extended the Class VIII system for one year, acquired system enhancements/ upgrades during FY 2001, ensured the production of critical products during FY 2002 and will end the Class VIII contact on September 30, 2003. A full and open competition

for a replacement system is anticipated to result in a contract award in April 2002 with parallel operations during FY 2003.

The NCEP CCS will consist entirely of commercial products, exclusive of NWS scientific codes. No custom designed systems or sub-systems will be considered during the acquisition of this resource.

NCEP intends to share risks associated with the transition of operations to a new system with the offeror of the new system. The offeor will be responsible for much of the code conversion work and NCEP personnel will be responsible for integrating those new codes into the operational job stream. A comprehensive Statement of Need and evaluation criteria based on previous successful transitions will mitigate these risks. NCEP scientists and computer programmers will manage the transition of operational codes. They will strive to extract the maximum performance from the computational resource, working with vendor personnel to do so.

Payment incentives will be investigated in the context of system performance. System performance will be measured by re-running benchmark codes, modified by mutual agreement between the government and the vendor. Performance measures will strictly monitor system dependability and the ability of NCEP to fulfill its operational forecasting obligations. NCEP rigorously tracks adherence to forecast product production schedules and utilization of the computational resource.

NCEP intends the CCS resource to be a commercial-off-the-shelf system. A staged acquisition will allow the project to take advantage of new technology as it enters the market as well as to benefit from market driven prices.

Performance Monitoring:

On-time product delivery is the foremost factor in system performance. Daily measures of this performance element are obtained and stored in a database from which monthly statistical reports are generated.

NCEP uses its benchmark codes to verify computational performance at every delivery of new hardware. Typically, a benchmark run starts the acceptance test, 30-days at our contracted level of system dependability, which is re-run for every major hardware upgrade. The benchmark codes are run routinely during the acceptance test, at least once per day, and results (performance, numerical answers, execution time) are compared with all the other runs.

Post acceptance, on a continuous basis, NCEP carefully monitors computational performance on each and every production code. NCEP does this in order to precisely time model execution and to predict the time for upgraded model execution. For example, NCEP predicted that the improved Global forecast model (T170), implemented in January 2000, could run within the permissible schedule. Performance tests of this type are routinely executed by the Environmental Modeling Center on the 50% of the Class VIII system reserved for development.

Benchmarks are modified over time to reflect NCEP's operational needs and to prove more challenging during the competitive acquisition process. Whenever a benchmark is changed the old and new versions are run on the same hardware/software configuration so a true comparison can be determined.

NCEP's performance measures and modeling milestone are directly tied to improved model performance which relies upon ever more complicated forecast models. NCEP will not meets these goals unless our computing system performs according to specifications.

Contracting

NCEP plans to use a single contract for this project. The contract will stipulate a base performance period of three years and will include provisions for two options for a period of three years each (total of nine years of performance). A performance based award criteria will be applied to the initial base period award and to each option year award. The contract will also include one year options to support the Government's ability to reject a proposed system and conduct a new full and open competition.

E. Enterprise Architecture (IT Projects Only)

The CCS system will support standard programming languages (FORTRAN and C), utilize a standard operating system (UNIX), employ standard protocols for communications (TCP/IP and NFS), and comply with industry standards such as the Message Passing Interface (MPI) which is the programming standard used to parallelize applications within a distributed memory architecture. This

adherence to a standard, well-defined, and well-understood computing environment will enable the NCEP staff to collaborate with academic researchers and to transition the results of such collaboration into operational forecasting applications. The resources acquired under this initiative will be fully consistent with NCEP's information system architecture and will be accessible via NCEP's established network which links the hundreds of UNIX servers, workstations, and other devices currently employed by NCEP staff members.

The next generation high performance computer system will be entirely comprised of commercial off-the-shelf components, including all hardware and software. The only customized software planned for the system are the NWS weather and climate forecasting models, data assimilation and other meteorological functions for which there are no commercial equivalents or substitutes.

The NOAA's IT Architecture documentation can be found on the Internet at http://www.hpcc.noaa.gov/noaaiata. Contact Mr. Ira Grossman at 301 713-3525 ext. 140 for the User ID and Password for access to this site.

F. Security and Privacy (IT projects only)

Discuss the security plan for this project and:

1. demonstrate that the costs of security controls are understood and are explicitly incorporated in the life-cycle planning of the overall system, including the additional costs of employing standards and guidance more stringent than those issued by NIST;

   The NCEP CCS is a very large computing system used to run meteorological and climatological forecast models. It is a "backroom" system with tightly controlled access for NCEP production and selected scientific staff. It is secured behind a firewall system. That firewall system is part of NCEP's overall IT infrastructure. NCEP's security budget is about 5% of its total.

2. demonstrate how the agency ensures that risks are understood and continually assessed;

   NCEP supports full time FTEs devoted to security. Security measures are routinely tested and updated.

3. demonstrate how the agency ensures that the security controls are commensurate with the risk and magnitude of harm;

   NCEP security measures have prevented any penetration of the NCEP high performance computer system. The firewall system is well maintained and up to date. User access and passwords for the high performance computer system are tightly controlled and mandatory password changes are required of all users

4. identify additional security controls for systems that promote or permit public access, other externally accessible systems, and those that are interconnected with systems over which program officials have little or no control;

   The CCS is not available to the public. Public access to products is provided by servers outside the NCEP firewall.

5. demonstrate how the agency ensures the effective use of security controls and authentication tools to protect privacy for those systems that promote or permit public access; and

   Privacy concerns are not an issue for the CCS or its products. Products are made available on public access servers via the internet. Public access to the CCS not permitted.

6. demonstrate how the agency ensures that the handling of personal information is consistent with relevant government-wide and agency policies.

   No personal information is involved with the NCEP CCS.

NCEP will implement "NOAA CENTRAL COMPUTER FACILITY SECURITY PLAN", identification number N-8220, submitted to NOAA/DOC on November 8, 1999. The plan addresses infrastructure security services with respect to external and internal access, disaster recovery and incident responses. Security implementation is addressed for each hardware delivery (initial delivery, technology refreshment, enhancement, etc.) and for operating system upgrades.

G. Government Paperwork Elimination Act (GPEA) (IT projects only)

N/A

Capital Asset Plan (Exhibit 300) OMB A-11, FY2003 Budget Submission

H. Section 508 (IT Projects only)

1. Does Section 508 Apply? _____Yes (go to question #2)
___✔___ No (go to question #3)

2. Yes Section 508 Applies for the technical standards:
_____1194.21 - Software applications and operating systems
_____1194.22 - Web-based Intranet and Internet information and applications
_____1194.23 - Telecommunications products
_____1194.24 - Video and/or Multimedia products
_____1194.25 - Self contained, closed products
_____1194.26 - Desktop and portable computers
_____1194.41 - Information , documentation and support

3. No Section 508 Does Not Apply because of (choose one)
A. Exemption:

_____ 36 CFR 1194.3 (b) A fundamental alteration would be required in the nature of a product or its components (e.g., adding a large display on a pager or palm pilot would significantly change the size; thus the nature of the product)

___✔___ 36 CFR 1194.3(f) Products will be located in spaces frequented only by service personnel for maintenance, repair or occasional monitoring of equipment (e.g. telecommunications equipment switches , servers)

_____ 36 CFR 1194.2(a) Would imposed an undue burden on the agency (Means significantly difficulty or expense) Undue Burden documentation is required.

B. Commercial non-available:

_____ 36CFR 1194.2(b) Commercial items are not available that meet applicable technical provisions. Commercial non-available documentation is required.

PART III: COST, SCHEDULE, AND PERFORMANCE GOALS

A. Performance Based Management System (PBMS): Which performance based management system will you use to monitor contract or project progress?

The contract will require the CCS supplier to demonstrate computational performance and to maintain an account of system availability and reliability. Computational performance is measured directly through so-called benchmark codes. If the guaranteed level of performance is not achieved, the contract will specify remedial actions up to and including augmenting the system with additional hardware to increase performance. Accurate measurements of computing system "readiness" to perform work is derived from availability and reliability statistics (specifically defined in the contract). Penalties for non-compliance with required availability and reliability performance levels will be specified in the contract.

NCEP will require 99% system availability for operations, 98% overall system reliability and additional requirements in support of on-time product delivery will be developed for the CCS RFP.

B. Original baseline (OMB approved at project outset): Using the format of your selected PBMS, provide the following:

1. What are the cost and schedule goals for this segment or phase of this project? [i.e., what are the project milestones or events, when will each occur; and what is the estimated cost to accomplish each one]

The original baseline employed the Class VIII system for Numerical Weather Prediction (weather forecasting) from October 1998 until September 2002. The CCS system was expected in October 2001, providing NCEP with one year to convert its operations from the Class VIII to the CCS system.

A Climate Forecasting initiative was proposed in FY 1999 that would make NCEP's experimental climate forecasting products part of its operations. As proposed, climate forecasting was to have been conducted on an early delivery of the CCS system, March 2001. Thereafter, funds for operational climate forecasting were to have been added to NCEP's Numerical Weather Prediction program for an integrated computational resource.

A reduction in funding for FY 2002 and non-competitive market conditions caused NCEP to reevaluate its strategy. Lacking competition and facing a serious budget situation in FY 2002, NCEP decided that an extension of the Class VIII contract would provide the best return on investment.

Level of effort: (millions)

FY	2003	2004	2005	2006	2007	2008	2009	2010	2011
Equipment on Acquisition:	15.0	15.0	15.0	15.0	15.0	15. 0	15.0	15.0	15.0
Maintenance and Support Services	2.7	2.7	2.7	3.5	2.7	2.7	2.7	2.7	2.7
TOTAL	17.7	17.7	17.7	18.5	17.7	17.7	17.7	17.7	17.7

Schedule Milestones:

Issue CBD announcement	January 2001
Publish Project Agreement	January 2001
Release draft Statement of Need Synopsis	January 2001
Release sample of operational codes	January 2001
Begin informal vendor discussion	January 2001
Release RFI and initial benchmark codes	February 2001
Exhibit 300B Submitted to DOC	March 28, 2001
Exhibit 300B Approved by DOC CIO	May 2001
DPA Received from DOC	May 2001
Receive written responses to RFI	May 2001
Release current benchmark codes (high resolution version of codes)	June 2001
Release RFP/final benchmark codes	August 2001
Receive vendor proposals	November 2001
Complete competitive range determination	December 2001
Vendor Downselect	December 2001
Conduct LTDs	February 2002
Receive revised proposals	March 2002
Consensus completed	March 22, 2002
Final round of vendor discussions closed	March 29, 2002
Receive final proposals	April 5, 2002
Prepare award recommendation	April 12, 2002
Award contract	April 26, 2002
Delivery of services/site preparation	July 2002
CCS available (accept system)	November 2002
Initiate operations and transition activities	November 2002

2. What are the measurable performance benefits or goals for this segment or phase of this project? [what are the measurable performance improvements or efficiencies that you expect to achieve with this project?]

The performance measures listed below refer to improved weather and climate forecast products. These products are made possible by increased performance from the NCEP Central Computer System.

PERFORMANCE MEASURES

NCEP Performance Measures	FY 00	FY 01	FY 02	FY 03	FY 04	FY05
Hurricane Prediction System: TPC 72 hour tropical cyclone track forecast error(miles) [1]	221	212	208	205	201	198

Mesoscale Precipitation Forecasting over N. America:						
Day 2/Day 1 (1999) ratio[2]	.89	.91	.93	.95	.99	1.00
Day 3/Day 2 (1999) ratio[2]		.80	.82	.84	.86	.88
Aviation Forecasts, the day forecasts reach their 1980 1-day error level[3]	2.8	2.9	3.0	3.1	3.2	3.3
Climate Forecast, Temperature Skill Score[4]	14	20	21	22	23	24
Climate Forecast, Precipitation Skill Score[4]	6	9	10	11	12	13

NCEP Performance measures were changed to better reflect their basis in Numerical Weather Prediction and to correlate with the performance measures used elsewhere. The numbers above must be considered with some sophistication. In most cases there is a great deal of inter-annual variability (or noise) that interferes with one's ability to note trends or improvements in these statistical performance measures over the short term.

[1]The Tropical Prediction Center (National Hurricane Center) issues forecasts for tropical storm and hurricane tracks at several valid times. The 72 hour forecast is used here because it relates well to the lead time required for coastal evacuation.

[2] The Day2 / Day/1(1999) statistic is the ratio of the skill of the 48 hour forecast in predicting a quarter inch amount of precipitation to the skill of the 24 hour forecast in 1999. Initially, the number is less than 1.0 indicating the longer range Day 2 forecast has less skill than the shorter range Day 1 forecast, but the number is projected to increase to 1.0 by 2005, indicating the Day 2 forecast is as good as the 1999 Day 1 forecast. Day 3 forecasts were initiated in April 2001, taking advantage of the increased computer power of the Phase II upgrade to the IBM SP (NCEP's current high performance computing system). This performance measure is subject to interannual fluctuations. This projected model improvement in precipitation forecast skill is critical to the NWS meeting its strategic goal to attain 1999 Day 2 accuracy at Day 3 in 2005 for the public forecasts.

[3]The Aviation Forecasts are produced with the same global model used to make the medium-range forecasts, but with a shorter data hold. This measure is the day at which the Aviation forecast of 500 mb height is equal to the errors found during 1980 forecasts. In other words, in 2000, NCEP was able to forecast upper air conditions 2.8 days in advance with as little error as a 24 hour forecast in 1980. The Aviation Model is also a critical component of the hurricane prediction system.

[4]The Heidke Skill Score is a measure of forecast skill ranging from -50 to 100 (perfect forecast). It measures the accuracy in probability forecasting in terms of improvement over random chance. The performance measure provided is a three month mean of both temperature and precipitation category forecast accuracy for a lead time of 0.5 months.

C. Current baseline (applicable only if OMB approved the changes):

Using the format of your selected PBMS, provide the following:

1. What are the cost and schedule goals for this segment or phase of the project?

Same as Part III, B.1 above.

2. What are the measurable performance benefits or goals for this segment or phase of this project?

Same as Part III, B.2 above.

D. Actual Performance and Variance from OMB approved baseline:

1. Actual cost and schedule performance. Using the information from your PMBS, explain:
   a. What work you planned (scheduled) to accomplish and how much you budgeted to complete the work.
   b. What you actually accomplished and how much you actually spent.

1. Variance in schedule

a. NCEP intends to extend the Class VIII contract one year (to end on September 30, 2003) and to award the CCS in August 2002 (instead of in October 2001).

Implementation of model improvements and attainment of NWS Strategic Goals in FY 2002 and beyond are expected to be delayed one year by the Central Computer System budget shortfall in FY 2002. These delays are included in the Performance Measures provided in Part III, B.2 above.

b. Variance in performance

Model improvements delayed in FY 2002 and beyond and performance goals have been changed to reflect this delay.

2. Cost and schedule variance. If either the actual work accomplished or costs incurred vary from your baseline goals by 10 percent or more, explain:
   a. The variance between planned and actual costs or planned and actual schedule, expressed as a percentage of the baseline goal.
   b. The reason for the variance.

A FY 2002 budget reduction of $5,000,000 required a revision of weather and climate forecasting goals.

3. Performance variance. Explain whether, based on work accomplished to date, you still expect to achieve you performance goals. If not, explain the reason for the variance.

NCEP expects to accomplish the performance goals provided in Part III, B.2 under the proposed budget.

E. Corrective actions:

If actual work accomplished or costs incurred to date vary from the planned baseline goals by 10 percent or more, explain:
   a. What you plan to do, if anything, to correct project performance.
   b. What effect your action will have on overall projects cost, schedule, and performance benefits.

N/A

Capital Asset Plan (Exhibit 300) OMB A-11, FY2003 Budget Submission

PART I. A. SUMMARY OF PROJECT INFORMATION For detailed instructions on completing the capital asset plan please see A-11 details section 300 at www.whitehouse.gov/omb												
Agency	Department of Commerce											
Bureau	National Oceanic and Atmospheric Administration											
Account Title	Procurement, Acquisition and Construction											
Account Identification Code	006-48-1460											
Program Activity	System Acquisition											
Name of Project	Next Generation Weather Radar (NEXRAD) System Planned Product Improvement											
Unique Project Identifier	006-48-01-12-01-1020-02											
This project is ____ New or ___x__ Ongoing												
Project/Useful segment is funded: ___x___ Incrementally _____Fully												
Did the Executive/Investment Review Committee approve funding for this project this year?									Yes	x	No	
Did the CFO review the cost goal?									Ye	X	No	
Did the Procurement Executive review the acquisition strategy?									Yes	X	No	
Is this project information technology (see Section 53.2 for a definition)?									Yes	x	No	
For information technology projects *only*. (The CIO must review)												
a. Is this Project a Financial Management System (see section 53.2 for a definition)?									Yes		No	x
If so, does this project address a FFMIA compliance area?									Yes		No	
If so, which compliance area?												
b. Does this project implement electronic transactions or recordkeeping?									Yes		No	x
If so, is it included in your GPEA plan?									Yes		No	
c. Was a privacy impact assessment performed on this project?									Yes		No	x
d. Does the security of this project meet the requirements of the Government Information Security Reform Act (GISRA)?									Yes	x	No	
e. Were any weaknesses identified for this project in the annual program review or independent evaluation?									Yes		No	x

B. SUMMARY OF SPENDING FOR PROJECT STAGES

(In Millions)

	FY00 and Earlier	FY01	FY02	FY03	FY04	FY05	Fy06	FY07	FY08+ Beyond	Total
Planning										
Budget Authority										
Outlays										
Full Acquisition										
Budget Authority	13.98	8.26	8.26	8.26	8.26	8.26	8.26	8.26	33.42	105.23
Budget Authority (ORF)		0.950	0.950	0.950	0.950	0.950	0.950	0.950		
Outlays										
Subtotal (planning and full acquisition) (DME)										
Budget Authority										
Outlays										
Maintenance (SS)										
Budget Authority										
Outlays										
Total all phases (DME plus SS)										
Budget Authority		9.212	9.212	9.212	9.212	9.212	9.212	9.212		
Outlays										

C. PROJECT DESCRIPTION
(briefly describe (less than 1/2 page) the general purpose of the project and the expected performance outcome at project completion)

The NPI Program is currently replacing the Radar Product Generation (RPG), Radar Data Acquisition (RDA), and Principal User Position (PUP) components of NEXRAD with open systems designs. The RPG is the engine that creates weather information (forecaster products) from the basic radar data. The RDA controls the radar operations, and generates basic radar data estimates of precipitation strength and storm winds. The replacement components, for the purposes of this program, are called the Open RPG (ORPG), and the Open RDA (ORDA). The ORDA replacement activity also has a follow-on activity called the Dual Polarization implementation to design and implement advanced polarization techniques for the NEXRAD radar system.

PART II: JUSTIFICATION AND OTHER INFORMATION

A. Justification

1. Agency Mission

The National Weather Service (NWS) provides the Nation with as complete, accurate, and timely meteorological and hydrological services as possible within existing scientific, technological, and economic constraints. These services include data collection, data analysis, forecasting, and information dissemination. One of the most important elements of this overall mission is the NWS' responsibility for public warnings and forecasts. The goal of this service is to provide the public with timely and accurate meteorological, hydrological, and oceanographic information for both public safety and planning purposes.

2. Brief Description of the Initiative

The NEXRAD system is one of NWS' prime observation systems for acquiring information about tornados, severe thunderstorms, and flash floods. NEXRAD is a tri-agency program of the NWS (Department of Commerce), the Air Force Weather Agency (Department of Defense) and the Federal Aviation Administration (Department of Transportation). Nexrad Product Improvement (NPI) is an ongoing tri-agency (DOC, DOD, DOT) initiative that will: (1) improve NWS tornado, large hail and flash flood warnings; (2) provide for cost effective long-term maintenance of WSR-88D units, and (3) postpone indefinitely the need for a complete replacement for the WSR-88D. The Open System Architecture project. currently underway, will replace the obsolete, 12 year old computer and signal processing equipment in the WSR-88Ds with COTS hardware and standards-based open system compliant software. The existing WSR-88D equipment is growing increasingly expensive to maintain, and is unable to meet the processing demands of new scientific algorithms that could improve the forecaster's ability to use radar data to identify tornados and other severe weather. NPI Open System Architecture and Dual Polarization projects will enable the use of new algorithms, and will allow the implementation of new radar engineering technology to increase the update rate of data acquisition; to acquire higher resolution data; to mitigate the range/velocity ambiguity problems; to remove non-weather clutter from data; and to acquire data to distinguish among rain, snow and hail.

The NPI Program is currently replacing the Radar Product Generation (RPG), Radar Data Acquisition (RDA), and Principal User Position (PUP) components of NEXRAD with open systems designs. The RPG is the engine that creates weather information (forecaster products) from the basic radar data. The RDA controls the radar operations, and generates basic radar data estimates fo precipitation strength and storm winds. The replacement components, for the purposes of this program, are called the Open RPG (ORPG), and the Open RDA (ORDA). The ORDA replacement activity also has a follow-on activity called the Dual Polarization implementation to design and implement advanced polarization techniques for the NEXRAD radar system.

3. Expected Outcome

The NPI Program will be implemented in three parts. The ORPG will complete deployment in FY02. It will allow direct LAN to LAN connection between the ORPG and AWIPS and increase the data resolution of the radar data from 4 to 8 bits (16 levels of data to 256 levels of data). With the implementation of the new software builds in FY03, the ORPG will provide improved severe weather algorithms, new algorithms for snowfall and damaging downburst, improved radar scan resolution, and use of data from FAA radars. The ORDA will complete deployment in FY05. It will provide reflectivity resolution data resolution every 1/4 km versus 1 km now, data sampling at every ½ degree versus 1 degree now, and

improved velocity product processing. The new radar capability combined with AWIPS processing capability such as the SCAN (System for Convection Analysis and NowCasting) Program will improve NWS tornado and severe weather warnings. The improved capability will enable NWS to improve its tornado warning goals as follows:

Performance Measures	Probability of Detection	False Alarm Rate	Lead Time
FY2001	.68	73%	13 min
FY2005	.80	55%	15 min

It is expected that once the ORDA deployment is complete, the improvement in warning lead time will be on the order of 17 minutes (based on actual use of experimental NSSL techniques at Weather Forecast Offices.

Dual Polarization will complete deployment in FY08. It will provide improved precipitation identification and improved precipitation estimates. The Joint Polarization Experiment (JPOLE) will be conducted in FY02 to collect data and information that will allow cost/benefit analyses to be performed and to demonstrate the utility and feasibility of the dual polarization capability.

3. Strategic Goals/Objective

The NPI Program was established to plan and implement continued improvement of the NEXRAD system to: 1) meet the strategic goal of advancing short-term warnings and forecast services for the general public, 2) meet FAA requirements for additional and higher quality products, and 3) meet DOD requirements for a radar user interface interoperable between NEXRAD and other Doppler weather radar systems.

In addition, the NPI meets the NWS Vision 2005 Strategic Plan Goals, 1.1, Expand and Improve the existing weather, water, and climate product and service line: Increase the accuracy and timeliness of NWS warnings; 1.2, Produce a seamless suite of products and services linking weather, water, and climate with an emphasis on emerging climate products, and 2.2, Reduce the time required to implement proven research and technology into operations.

The return on investment for this initiative includes the following: (1) improved NWS tornado, large hail and flash flood warnings (see item 2 above); (2) provide for cost effective long-term maintenance of WSR-88D units (reduction of repairable components and use of of the shelf items will reduce maintenance costs) , and (3) postpone indefinitely the need for a complete replacement for the WSR-88D (Deployment of the WSR-88D system was completed in 1996. The system has a specified 20 year lifetime. The inception of the NEXRAD program was in 1976. Given that it would take 20 years to design and deploy a new system, a major replacement would need to start now to finish deployment in 2021, 5 years beyond the useful life of the present system. The open system architecture to be deployed with this initiative will postpone the need for a complete replacement indefinitely and the standards based software design will allow more frequent infusions of new science techniques to the radar.)

B. Program Management

Have you assigned a program manager and contracting officer to this project? If so, what are their names?

Program Manager Name: Paul Nipko

Contracting Officer Name: Sharon Leigh

C. Acquisition Strategy

The acquisition of the NPI subsystem replacements will be managed by the NEXRAD Product Improvement (NPI) Program Manager. Acquisition management includes planning, coordinating, and tracking all development and procurement activities. All NPI projects will be guided by the WSR-88D Configuration Management and Modification/ Retrofit Management Plans developed for the NEXRAD program and approved by the tri-agencies.

The ORDA acquisition will be managed by the NPI Program Manager. The Government designed Proof of Concept will serve as the basis of the ORDA subsystem. The Government will lead the development effort through the critical design review. Following the critical design review, development, integration and test and deployment will be handled by a contractor selected using the COMMITS (Commerce IT Solutions) acquisition vehicle. Selection of the COMMITS contractor will be based on a performance based statement of work and the source selection plan (available for review). An Independent Validation and Verification contractor will provide Quality Assurance for all phases of the project. Government program management and subject matter experts will oversee, review and approve, as appropriate.

The Government estimate of scope for the ORDA contract is a 4 year effort at $30.8M. The ORDA COMMITS contract will consist of 12 tasks, each funded separately. These are:

1. Technology Transfer and Technical Planning
2. System Requirements and Functional Analysis
3. System Design and Analysis
4. Preliminary Design
5. Detailed Requirements
6. Critical Design
7. Component Development and Test
8. Integration, System and Acceptance Testing
9. Training
10. System Support
11. Procurement
12. Deployment

The ORDA contract will be cost plus fixed fee for the first contract year and cost plus award fee for contract years two through four. Contract performance measures and award fee information are included in the Statement of work.

Also see Attachment A

D. Alternatives Analysis and risk management

The most recent life-cycle cost analysis was prepared at the beginning of the ORPG design and development phase and is available upon request. Estimates of the costs to maintain the proprietary components of the existing WSR-88D system reveal an increasing level of costs over time, with an expected major acquisition at the end of the system's expected life of 20 years. The WSR-88D processors cannot execute all of the current algorithms, cannot host many advanced data and signal processing techniques, and are growing increasingly obsolete and expensive to maintain. The NEXRAD agencies have committed to replacing the current processors with open system platforms and modern digital signal processors.

The ORPG project was conducted as an in house Government effort. Four alternatives were investigated for the ORDA project,
1. ORPG like, i.e. loosely structured Government lead for all aspects
2. Highly structured Government lead for all aspects
3. Highly structured Government lead for design and development, competitive contract for integration, test and deployment.
4. Government lead for design, competitive contract for development, integration, test and deployment.

The Government developed a work breakdown structure and an Independent Cost Estimate. A market study was conducted using the COMMITS vehicle. It was determined that COMMITS contractors were highly capable of providing the services necessary for the ORDA project and that costs would be below Government cost estimates. Based on the alternative studies it was decided to follow a contractor approach (4 above) for development, intergration, test and deployment of the ORDA using the Government provided Proof of Concept Design.

In addition, the Government hired Lincoln Laboratories to independently review the Government Proof of Concept Design. Lincoln Labs concluded that the Government Proof of Concept provided a solid foundation for a production system and that the software was suitable for production system use with minor modifications.

In FY02, the Government will conduct the Joint Dual Polarization Experiment (JPOLE) to determine the feasibility and utility of dual polarization. In addition, the experiment will provide information to allow a cost-benefit study to be performed.

E. Enterprise Architecture (IT Projects Only)

The project is fully compliant with all Federal Standards. The intent of the project is to provide an open architecture and, thus, one that can be modified to accommodate future requirements with minimal replacement of subsystems. The NPI program fully meets ISO 9001 standards. Further, the project has as a requirement the utilization of COTS hardware and software to the maximum extent possible. The project conforms with the NWS IT architecture.

The NOAA's IT Architecture documentation can be found on the Internet at http://www.hppcc.noaa.gov/noaaita. Contact Mr. Ira Grossman at (301) 713-3525 ext.140 for the User ID and Password for access to this site.

Capital Asset Plan (Exhibit 300) OMB A-11, FY2003 Budget Submission

F. Security and Privacy (IT projects only)

The NPI program will implement Security Plans for all projects. The ORPG Security Plan establishes the operational security controls, rules and responsibilities necessary to implement a viable system security program for NEXRAD. The ORPG system has been determined to be a C2 security level system, operating as a General Support System category. Guidance from the computer security requirements set forth in the Office of Management and Budget Circular A-130, *Management of Federal Information Resources*, OMB Circular A-130, Appendix III, *Security of Federal Automated Information Resources*, Department of Defense 5200.28-STD, *Department of Defense Trusted Computer System Evaluation Criteria* (the "Orange Book"); DoD Directive 5200.28, Security Requirements for Information Systems (ISs), Federal Aviation Administration Order 1600.54B, FAA AIS Security Handbook, and the WSR-88D Radar Operations Center system specifications for the operational requirements of the Open Systems Radar Product Generator system was utilized in the preparation of this document.

The estimated percentage of the total investment for FY 2003 associated with IT security is 0.2%.

G. Government Paperwork Elimination Act (GPEA) (IT projects only)

N/A

H. Section 508 (IT Projects only)

1. Does Section 508 Apply? _____Yes (go to question #2)
___x___ No (go to question #3)

2. Yes Section 508 Applies for the technical standards:
_____1194.21 - Software applications and operating systems
_____1194.22 - Web-based Intranet and Internet information and applications
_____1194.23 - Telecommunications products
_____1194.24 - Video and/or Multimedia products
_____1194.25 - Self contained, closed products
_____1194.26 - Desktop and portable computers
_____1194.41 - Information , documentation and support

3. No Section 508 Does Not Apply because of (choose one)
A. Exemption:

_____ 36 CFR 1194.3 (b) A fundamental alteration would be required in the nature of a product or its components *(e.g., adding a large display on a pager or palm pilot would significantly change the size; thus the nature of the product)*

__x_____36 CFR 1194.3(f) Products will be located in spaces frequented only by service personnel for maintenance, repair or occasional monitoring of equipment
(e.g. telecommunications equipment switches , servers)

_____ 36 CFR 1194.2(a) Would imposed an undue burden on the agency
(Means significantly difficulty or expense)
Undue Burden documentation is required.

B. Commercial non-available:

_____ 36CFR 1194.2(b) Commercial items are not available that meet applicable technical provisions. Commercial non-available documentation is required.

PART III: COST, SCHEDULE, AND PERFORMANCE GOALS

A. Performance Based Management System (PBMS): Which performance based management system will you use to monitor contract or project progress?

The work to design, develop, test, acquire, and deploy the components of the NPI program are performed by Government personnel, with selected contractor support. The NPI Project Plan approved by the three participating agencies, describes the overall program cost and schedule requirements of the program and the roles and responsibilities of the participating agencies to accomplish these goals. All work on the program is performed according to formally approved requirement specifications and resource allocations. All program work is scheduled according to detailed Work Breakdown Structure planning documents. All development groups report to program management monthly on progress metrics and technical risks. The three participating agencies provide funding for the NPI program to the NWS. Budget preparation, funding allocations, and spending are prepared and tracked by program management, with regular presentations to the three participating agencies. The budgetary aspects of the program are managed and tracked utilizing custom built spreadsheets and internal NWS budget tracking systems. The technical aspects of the program are scheduled and tracked by the OSF and reported to program management using the Microsoft Project scheduling application. Any cost or schedule variances against the baseline are reported to higher management along with associated causes, impacts, and corrective actions.

B. Original baseline (OMB approved at project outset): Using the format of your selected PBMS, provide the following:

1. What are the cost and schedule goals for this segment or phase of this project? [i.e., what are the project milestones or events, when will each occur; and what is the estimated cost to accomplish each one]

1. Cost and Schedule Goals

Complete the incremental development of the NPI components as follows:

Open RPG Software Development in January 1999
ORPG Development Test and Field Evaluation - January 1999 through Jan 2000
ORPG Full Scale Production - February 2000 through September 2001

Open RDA Development complete in 2001
ORDA Testing in 2001 and 2002
ORDA Full Scale Production in 2002 and 2003.

2. What are the measurable performance benefits or goals for this segment or phase of this project? [what are the measurable performance improvements or efficiencies that you expect to achieve with this project?]

C. Current baseline (applicable only if OMB approved the changes):

1. What are the cost and schedule goals for this segment or phase of the project?
1. Cost and Schedule Goals

Complete the incremental development of the NPI components as follows:

Open RPG Software Development in December 1999
ORPG Integrated Test and Field Evaluation - January 2000 through June 2001
ORPG Full Scale Production and Deployment - May 2001 through August 2002

Open RDA Development complete in 2003
ORDA Testing in 2003 and 2004
ORDA Full Scale Production in 2005 - 2007

Dual Polarization Development complete in September 2006
Dual Polarization testing complete in September 2007
Dual Polarization Full Scale Production in 2008 - 2010

2. What are the measurable performance benefits or goals for this segment or phase of this project?
See II.A.3, above.

D. Actual Performance and Variance from OMB approved baseline:

1. Actual cost and schedule performance. Using the information from your PMBS, explain:
a. What work you planned (scheduled) to accomplish and how much you budgeted to complete the work.
b. What you actually accomplished and how much you actually spent.

ORPG deployment is scheduled to be completed in August 2002 as planned within the planned budget.
3. Cost and schedule variance. If either the actual work accomplished or costs incurred vary from your baseline goals by 10 percent or more, explain: a. The variance between planned and actual costs or planned and actual schedule, expressed as a percentage of the baseline goal. b. The reason for the variance.
No variance from the actual cost and schedule baselines.
3. Performance variance. Explain whether, based on work accomplished to date, you still expect to achieve you performance goals. If not, explain the reason for the variance.
Based on work accomplished to date, no performance variance is expected.
E. **Corrective actions:** If actual work accomplished or costs incurred to date vary from the planned baseline goals by 10 percent or more, explain: a. What you plan to do, if anything, to correct project performance. b. What effect your action will have on overall projects cost, schedule, and performance benefits.

Capital Asset Plan (Exhibit 300) OMB A-11, FY2003 Budget Submission

PART I. A. SUMMARY OF PROJECT INFORMATION For detailed instructions on completing the capital asset plan please see A-11 details section 300 at www.whitehouse.gov/omb				
Agency	Department of Commerce			
Bureau	National Oceanic and Atmospheric Administration			
Account Title	Operations, Research, and Facilities			
Account Identification Code	006-48-13			
Program Activity	Operations and Maintenance			
Name of Project	Next Generation Weather Radar (NEXRAD) O&M			
Unique Project Identifier	006-48-01-12-01-2012-02			
This project is ____ New or ✔ Ongoing				
Project/Useful segment is funded: _____ Incrementally ✔ Fully				
Did the Executive/Investment Review Committee approve funding for this project this year?	Yes	✔	No	
Did the CFO review the cost goal?	Yes	✔	No	
Did the Procurement Executive review the acquisition strategy?	Yes	✔	No	
Is this project information technology (see Section 53.2 for a definition)?	Yes	✔	No	
For information technology projects *only*. (The CIO must review)				
a. Is this Project a Financial Management System (see section 53.2 for a definition)?	Yes		No	✔
If so, does this project address a FFMIA compliance area?	Yes		No	
If so, which compliance area?				
b. Does this project implement electronic transactions or record keeping?	Yes		No	✔
If so, is it included in your GPEA plan?	Yes		No	
c. Was a privacy impact assessment performed on this project?	Yes		No	✔
d. Does the security of this project meet the requirements of the Government Information Security Reform Act (GISRA)?	Yes		No	✔
e. Were any weaknesses identified for this project in the annual program review or independent evaluation?	Yes		No	

B. SUMMARY OF SPENDING FOR PROJECT STAGES

(In Millions)

	PY-1 and Earlier	FY01	FY02	FY03	FY04	FY05	FY06	FY07	Total
Planning									
Budget Authority									
Outlays									
Full Acquisition									
Budget Authority									
TPMS-DOC (non-IT)		4.1108	4.2288	3.3700	0.8282	0.2845	0.0000	0.0000	12.8223
TPMS-DOD (non-IT)		.9026	0.0935	0.0000	0.0000	0.0000	0.0000	0.0000	0.9961
Evansville-DOC (non-IT)		5.5000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	5.5000
Sustaining Eng Mods-DOC (IT)		0.1285	0.5660	1.4440	0.0800	1.0000		1.5200	5.7985
Sustaining Eng Mods-DOD (non-IT)		0.0000	0.0000	0.0000	3.8172	3.4409	3.6654	3.2054	14.1289
Sustaining Eng Mods-DOT (IT)		0.0000	0.0000	0.0000	0.0000	0.2000	0.2200	0.3100	0.7300
Sustaining Eng Mods-DOT (non-IT)		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Sustaining Eng Mods-DOD (IT)		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Sustaining Eng Mods-DOD (non-IT)		0.0000	0.0000	0.0000	0.0000	0.2400	0.2800	0.3700	0.8900
Outlays									
Subtotal (planning and full acquisition) (DME)									
Budget Authority									
TPMS		5.0134	4.3223	3.3700	0.8282	0.2845	0.0000	0.0000	13.8184
Evansville		5.5000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	5.5000
Sustaining Eng Mods		0.1285	0.5660	1.4440	3.8972	4.8809	5.2254	5.4054	21.5474
Subtotals		10.6419	4.8883	4.8140	4.7254	5.1654	5.2254	5.4054	40.8658

Capital Asset Plan (Exhibit 300) OMB A-11, FY2003 Budget Submission

Outlays									
Maintenance (SS)									
Budget Authority									
DOC- (IT)		11.5094	11.9402	11.6707	11.5654	11.5807	11.5699	11.5698	81.4061
DOD (non-IT)		22.0152	22.3962	22.6463	22.8404	22.8251	22.8359	22.8360	158.3951
DOT (IT)		1.1464	1.1083	1.1129	1.0795	1.0972	1.0895	1.1408	7.7746
DOD (non-IT)		2.8256	2.6571	2.6550	2.3806	2.4496	2.5441	2.5962	18.1082
DOD (IT)		1.0149	0.9814	0.9859	0.9506	0.9632	0.9502	0.9961	6.8423
DOD (non-IT)		2.6654	2.6585	2.4871	2.5294	2.3192	2.4115	2.4959	17.5670
Outlays									
Total all phases (DME plus SS)									
Budget Authority									
DOC (IT)		11.6379	12.5062	13.1147	11.6454	12.5807	12.6299	13.0898	87.2046
DOC (non-IT)		31.6260	26.6250	26.0163	27.4858	26.5505	26.5013	26.0414	190.8463
DOC-Total		43.2639	39.1312	39.1310	39.1312	39.1312	38.1312	39.1312	278.0509
DOT (IT)		1.1464	1.1083	1.1129	1.0795	1.2972	1.3095	1.4508	8.5046
DOT (non-IT)		2.8256	2.6571	2.6550	2.3806	2.4496	2.5441	2.5962	18.1082
DOT-Total		3.9720	3.7654	3.7679	3.4601	3.7468	3.8536	4.0470	26.6128
DOD (IT)		1.0149	0.9814	0.9859	0.9506	0.9632	0.9502	0.9961	6.8423
DOD (non-IT)		2.6654	2.6584	2.4871	2.5294	2.5592	2.6915	2.8659	18.4569
DOT-Total		3.6803	3.6398	3.4730	3.4800	3.5224	3.6417	3.8620	25.2992
Tri-agency Total (IT)		13.7992	14.5959	15.2135	13.6755	14.8411	14.8896	15.5367	102.5515
Tri-agency Total (non-IT)		37.1170	31.9405	31.1584	32.3958	31.5593	31.7369	31.5035	227.4114
Tri-agency-TOTAL		50.9162	46.5364	46.3719	46.0713	46.4004	46.6265	47.0402	329.9626
Outlays									

Capital Asset Plan (Exhibit 300) OMB A-11, FY2003 Budget Submission

C. PROJECT DESCRIPTION

(Briefly describe (less than 1/2 page) the general purpose of the project and the expected performance outcome at project completion)

The Next Generation Weather Radar (NEXRAD) system is one of NWS' prime observation systems for acquiring information about tornados, severe thunderstorms (containing damaging winds, hail, turbulence, and lightning), and heavy precipitation (leading to flash flooding and heavy snow). NEXRAD is a tri-agency program of the NWS (DOC), FAA (DOT), and USAF (DOD). The NEXRAD network is composed of 158 operational radars (120 NWS, 12 FAA and 26 USAF) and 8 non-operational radars used for training and depot-level support.

There are tri-agency agreements for the operation, maintenance, and cost sharing of network O&M costs. By tri-agency agreement, the NWS Office of Operational Systems is responsible for supporting the operations and maintenance of the NEXRAD network. This project provides for the sustaining engineering, operations, and maintenance of the NEXRAD system; those portions of the system considered IT, are located "down-stream" of the A-D board in the Radar Data Acquisition portion of the radar. While some of the USAF and FAA costs of O&M are agency-unique and not described here, all NWS O&M IT costs and shared-shared costs are described. These activities are required to ensure the reliable, continuous collection of radar data throughout the life of the system.

The radar network must be operated and maintained in a manner that meets or exceeds the required 96% service availability. Many components of the NEXRAD system are prone to technological obsolescence and require continuous technology refreshment to avoid obsolescence risk and maintain required service availability. Sustaining engineering modifications provide this technology refreshment as well as repair deficiencies in the NEXRAD system; these modifications are described in an 8-Year Mod Plan that is updated annually by the Radar Operations Center (ROC).

This project also includes the purchase of commercial radar to be installed near Evansville IN, to mitigate a low-level radar coverage shortfall in that area, as well as the purchase of the Transition Power Maintenance System (TPMS) at DOC and DOD sites to repair a deficiency in the radar power system. These NEXRAD O&M activities ensure the reliable collection of radar data that is transmitted to diverse tri-agency user systems to support agency-unique missions; however, this project does not include NEXRAD Product Improvement (NPI) activities. These NPI activities complement the O&M activities and are described in a separate NPI exhibit.

PART II: JUSTIFICATION AND OTHER INFORMATION

A. Justification

The NWS provides the Nation with as complete, accurate, and timely meteorological and hydrological services as possible within existing scientific, technological, and economical constraints. These services include data collection, data analysis, forecasting, and information dissemination. One of the most important elements of this overall mission is the NWS' responsibility for public warnings and forecasts. The timeliness and accuracy of these warnings and forecasts relies heavily on continuous, reliable, accurate weather radar information. The FAA and USAF also rely on this information for safe, efficient civil and military flight operations. NEXRAD O&M activities are essential to ensuring the continuous flow of radar information to tri-agency users and to sustaining the operation of the Nation's investment in the NEXRAD network.

B. Program Management

Have you assigned a program manager and contracting officer to this project? If so, what are their names?

Program Manager: Walter Telesetsky
Contracting Officer: Multiple Contracting Officers at NOAA, CASC, MASC, COMMITS, etc. for various procurements supporting the O&M program.

C. Acquisition Strategy

N/A—NEXRAD O&M is a sustaining activity. This is not an acquisition program, but NEXRAD O&M support activities do involve multiple procurements from several offices and supported by several different contracting offices. Many of the procurements fall under guidelines for micro and small procurements. Maximum use is made of pre-competed BPAs and other GWACs to support these procurements. The contracts for TPMS and commercial radar for Evansville were awarded by the NOAA Procurement Office after full and open competition.

D. Alternatives Analysis and risk management

N/A

E. Enterprise Architecture (IT Projects Only)

NEXRAD O&M activities do not affect NWS IT architecture. By definition, those activities that do affect IT architecture are described in a separate NEXRAD Product Improvement exhibit.

The NOAA's IT Architecture documentation can be found on the Internet at http://www.hppcc.noaa.gov/noaaita. Contact Mr. Ira Grossman at (301) 713-3525 ext.140 for the User ID and Password for access to this site.

Capital Asset Plan (Exhibit 300) OMB A-11, FY2003 Budget Submission

F. Security and Privacy (IT projects only)

In December 1999, the National Security Agency (NSA) conducted an independent security survey of the NEXRAD system. NSA noted the NEXRAD system was designed and implemented before the promulgation of most existing security requirements. However, NSA concluded that the NEXRAD system has sufficient security since it is a closed system; and, implementation of security features, to fully comply with new security requirements, should be done over time, as NEXRAD upgrades are implemented. Plans for implementing new security requirements are described in a separate NEXRAD Product Improvement Exhibit.

Currently, NEXRAD has dedicated communications network leased from Sprint Communications. Most interfaces are via dedicated circuits. Dial interface circuits are provided via dedicated sub networks on commercial networks on which only authorized users can gain dial access to the dedicated sub networks and thus gain access to NEXRAD equipment. In addition, all interfaces (dedicated and dial) are protected by user passwords to prevent unauthorized access to a NEXRAD communications port. Further, vulnerable NEXRAD hardware is located in physically secure equipment shelters surrounded by security fences which are remotely monitored by an electronic security system or in buildings with “trusted” government staff.

There is no sensitive data produced by the NEXRAD radar network. The only restricted data are the passwords used by authorized users to gain access to communications ports or to change technical parameters on how radar data is processed. The data produced is given the widest distribution possible outside the NEXRAD network as a public service and there are no restrictions on dissemination of NEXRAD data. The major security issue for NEXRAD is the vulnerability to an external source introducing a problem that could cause system crashes or an external source denying service to authorized interfaces. There is no direct access from the NEXRAD network to the Internet.

The estimated percentage of the total investment for FY 2003 associated with IT security is 1.22%.

G. Government Paperwork Elimination Act (GPEA) (IT projects only)

N/A — this project does not support electronic transactions or record keeping.

H. Section 508 (IT Projects only)

1. Does Section 508 Apply? __✔__Yes (go to question #2)*
__✔__ No (go to question #3)*

* (1) Some IT equipment and expenses listed in this summary are IT items in remotely located, unmanned WSR-88D equipment shelters; (2) remaining IT equipment and expenses listed in this summary are PCs and workstations housed in office spaces.

2. Yes Section 508 Applies for the technical standards:
__✔__1194.21 - Software applications and operating systems
__✔__1194.22 - Web-based Intranet and Internet information and applications
__✔__1194.23 - Telecommunications products
__✔__1194.24 - Video and/or Multimedia products
__✔__1194.25 - Self contained, closed products
__✔__1194.26 - Desktop and portable computers
__✔__1194.41 - Information, documentation and support

3. No Section 508 Does Not Apply because of (choose one)
A. Exemption:

_____ 36 CFR 1194.3 (b) A fundamental alteration would be required in the nature of a product or its components *(e.g., adding a large display on a pager or palm pilot would significantly change the size; thus the nature of the product)*

__✔__36 CFR 1194.3(f) Products will be located in spaces frequented only by service personnel for maintenance, repair or occasional monitoring of equipment
(e.g. telecommunications equipment switches , servers)

_____ 36 CFR 1194.2(a) Would imposed an undue burden on the agency
(Means significantly difficulty or expense)
Undue Burden documentation is required.

B. Commercial non-available:

_____ 36CFR 1194.2(b) Commercial items are not available that meet applicable technical provisions. Commercial non-available documentation is required.

PART III: COST, SCHEDULE, AND PERFORMANCE GOALS

A. Performance Based Management System (PBMS): Which performance based management system will you use to monitor contract or project progress?

NEXRAD O&M is sustaining activity, including maintenance, reconditioning, and sustaining engineering work to design, develop, test, acquire, and deploy technology refreshment and deficiency-repair components is performed by tri-agency Government personnel, with selected contractor support. O&M plans approved by the three participating agencies describe the overall program cost and schedule requirements of the program; and, the roles and responsibilities of the participating agencies to accomplish these goals. All work on the program is performed according to formally approved requirement specifications and resource allocations. Sustaining engineering work is scheduled according to a detailed Work Breakdown Structure. All work teams report to ROC management monthly on progress metrics and technical risks; major projects are also reported to senior NWS management. The three participating agencies provide funding for the ROC's life-cycle support to the NWS. Budget preparation, funding allocations, and spending are prepared and tracked by program management, with regular presentations to the three participating agencies. The budgetary aspects of the program are managed and tracked utilizing custom build spreadsheets and internal NWS budget tracking systems. The technical aspects of the program are scheduled and tracked by the ROC and reported to program management using Microsoft Project Cost or schedule variances against the baseline are reported to higher management along with associated causes, impacts, and corrective actions.

Capital Asset Plan (Exhibit 300) OMB A-11, FY2003 Budget Submission

B. Original baseline (OMB approved at project outset): Using the format of your selected PBMS, provide the following:

1. What are the cost and schedule goals for this segment or phase of this project? [i.e., what are the project milestones or events, when will each occur; and what is the estimated cost to accomplish each one]

Evansville	Total	$5.5M	
-Site acquisition		$.9M	2QFY02
-Radar acquisition/install		$4.3M	2QFY03
-Network Integration		$0.3M	3QFY03
TPMS	Total	$40.23M	Schedule 55.4 mo

2. What are the measurable performance benefits or goals for this segment or phase of this project? [What are the measurable performance improvements or efficiencies that you expect to achieve with this project?]

Evansville—provides low-level radar coverage to mitigate coverage shortfall in the area using commercial radar with characteristics similar to the WSR-88D.

TPMS—repairs a deficiency in the NEXRAD system by providing uninterrupted power to the radar to ensure the continuous operation and flow of data during power interruptions/outages; also provides conditioned power that results in fewer parts failures and improved system availability.

C. Current baseline (applicable only if OMB approved the changes):

1. What are the cost and schedule goals for this segment or phase of the project?

Evansville—same as B.1

TPMS-- Total $46.728 Schedule 80 mo
[Cost and schedule increase projected due to required change in uninterrupted power source technology, and due to insufficient level of annual funding to sustain higher deployment rate]

2. What are the measurable performance benefits or goals for this segment or phase of this project?

Evansville—same as B.2

TPMS—same as B.2

D. Actual Performance and Variance from OMB approved baseline:

1. Actual cost and schedule performance. Using the information from your PMBS, explain:
a. What work you planned (scheduled) to accomplish and how much you budgeted to complete the work.
b. What you actually accomplished and how much you actually spent.

N/A

3. Cost and schedule variance. If either the actual work accomplished or costs incurred vary from your baseline goals by 10 percent or more, explain:
a. The variance between planned and actual costs or planned and actual schedule, expressed as a percentage of the baseline goal.
b. The reason for the variance.

N/A

3. Performance variance. Explain whether, based on work accomplished to date, you still expect to achieve you performance goals. If not, explain the reason for the variance.
N/A
E. **Corrective actions:** If actual work accomplished or costs incurred to date vary from the planned baseline goals by 10 percent or more, explain: a. What you plan to do, if anything, to correct project performance. b. What effect your action will have on overall projects cost, schedule, and performance benefits.
N/A

Capital Asset Plan (Exhibit 300) OMB A-11, FY2003 Budget Submission

PART I. A. SUMMARY OF PROJECT INFORMATION
For detailed instructions on completing the capital asset plan please see A-11 details section 300 at
www.whitehouse.gov/omb

Agency	Department of Commerce				
Bureau	National Oceanic and Atmospheric Administration				
Account Title	Operations, Research, and Facilities				
Account Identification Code	006-48-13				
Program Activity	Operations and Maintenance				
Name of Project	National Weather Service Telecommunication Gateway (NWSTG) Operations and Maintenance				
Unique Project Identifier	006-48-01-12-01-1070-02				
This project is ____ New or ✔ Ongoing					
Project/Useful segment is funded: _____ Incrementally __✔_Fully					
Did the Executive/Investment Review Committee approve funding for this project this year?		Yes	✔	No	
Did the CFO review the cost goal?		Yes	✔	No	
Did the Procurement Executive review the acquisition strategy?		Yes	✔	No	
Is this project information technology (see Section 53.2 for a definition)?		Yes	✔	No	
For information technology projects *only*. (The CIO must review)					
a. Is this Project a Financial Management System (see section 53.2 for a definition)?		Yes		No	✔
If so, does this project address a FFMIA compliance area?		Yes		No	
If so, which compliance area?					
b. Does this project implement electronic transactions or record keeping?		Yes		No	✔
If so, is it included in your GPEA plan?		Yes		No	
c. Was a privacy impact assessment performed on this project?		Yes		No	✔
d. Does the security of this project meet the requirements of the Government Information Security Reform Act (GISRA)?		Yes	✔	No	
e. Were any weaknesses identified for this project in the annual program review or independent evaluation?		Yes		No	✔

B. SUMMARY OF SPENDING FOR PROJECT STAGES

(In Millions)

	PY-1 and Earlier	FY01	FY02	FY03	FY04	FY05	FY06	FY07	Total
Planning									
Budget Authority									
Outlays									
Full Acquisition									
Budget Authority									
Outlays									
Subtotal (planning and full acquisition) (DME)									
Budget Authority									
Outlays									
Maintenance (SS)									
Budget Authority		6828	7217	7217	7217	7217	7217	7217	N/A
Outlays									
Total all phases (DME plus SS)									
Budget Authority		6828	7217	7217	7217	7217	7217	7217	N/A
Outlays									

Capital Asset Plan (Exhibit 300) OMB A-11, FY2003 Budget Submission

C. PROJECT DESCRIPTION

(Briefly describe (less than 1/2 page) the general purpose of the project and the expected performance outcome at project completion)

The National Weather Service Telecommunication Gateway (NWSTG) is responsible for the acquisition and distribution of hydro meteorological data for National Weather Service (NWS) national centers, and forecast offices, many Federal agencies including DOD, private and commercial partners, the public, and numerous international partners. This project provides Operations and Maintenance (O&M) funding for the NWSTG, ensuring that it continues fulfilling its mission to provide weather and flood watches and warnings; public forecasts; and, planning data and products for the United States, its territories and possessions, adjacent coastal waters, and oceans.

PART II: JUSTIFICATION AND OTHER INFORMATION

A. Justification

National Weather Service is the Federal agent charged with monitoring the atmosphere, including ocean and coastal waters, and providing assessment and prediction services to a wide variety of clients and customers. The NWSTG is a critical element allowing NWS to satisfy this charge through the collection and distribution of hydro meteorological data. The NWSTG allows the NWS and its partners - public, private, and commercial - to perform their core functions and has been identified as an essential government resource in Presidential Decision Directive – 67 *Enduring Constitutional Government and Continuity of Government Operations.*

The NWSTG supports the NWS mission by collecting and distributing raw and processed hydro meteorological data. Surface and upper air observations are collected from NWS Forecast Offices; other Federal, state and local agencies; and, foreign meteorological agencies. These data and products are distributed then, to users, for flight planning; monitoring of current and short term weather conditions; development of local forecasts and public products; and, ingest into meteorological models. Local forecasts, weather watches and warnings, meteorological models, and other products derived from surface and upper air data and products are then collected by the NWSTG and distributed to users.

The NWSTG has assumed many responsibilities for the collection and distribution of hydro meteorological data previously performed by the military and other U.S. government agencies due to downsizing and other changes affecting their missions. During recent UN and NATO activities in the Balkans, the NWSTG was a primary source of meteorological data to U.S., NATO, and UN forces. Amongst other responsibilities, which NWS has assumed, the NWSTG is responsible for operations of the World Area Forecast System (WAFS), a satellite broadcast of meteorological data primarily supporting aviation operations to over 60% of the globe.

The NWSTG is the gateway for hydro meteorological data from North, Central, and South America in the World Meteorological Organization's Main Telecommunications Network, the Global Telecommunication System (GTS). The GTS is the primary means for the meteorological organizations of the world to exchange current and forecast weather information. The NWSTG is one of six regional hubs on the GTS.

B. Program Management

Have you assigned a program manager and contracting officer to this project? If so, what are their names? Yes.

Program Manager – The Chief, Telecommunication Operations Center is responsible for the operations and maintenance of the NWS Telecommunication Gateway.

Contracting Officer – N/A, contracting officers will be assigned for individual procurements.

C. Acquisition Strategy

A complete systems engineering approach is applied to the design of the NWSTG, supporting the NWS IT architecture (ITA). NWSTG management balances the Governments risk versus cost through the competitive bidding process to acquire new equipment and supporting services. A phased-in, modular design is employed for equipment replacement within the NWSTG, reflecting the NWS ITA. This allows incremental equipment replacement. An incremental replacement strategy allows the phasing-in of replacement hardware and software, minimizing possible negative impacts on the operation of the NWSTG, reducing risk associated with this equipment and software, and smoothing out of budgetary actions. NWSTG management uses COMMITS and other GWAC contract vehicles where possible to acquire services.

A sustaining engineering approach is employed within the NWSTG to insure support to clients and customers does not degrade

Commercial, off-the-shelf, systems (COTS) will be selected and implemented where possible to take advantage of the standards-based environment, reduced development times, and other savings as specified in the Clinger-Cohen Act. Internal development will be employed only in those cases where COTS or Government, off-the-shelf, systems (GOTS) are not available.

Capital Asset Plan (Exhibit 300) OMB A-11, FY2003 Budget Submission

D. Alternatives Analysis and risk management

Performance based contracting procedures are used to insure that risk is appropriately shared between the Government and contractors. Clear measures and reporting points are established at the initiation of all work to provide timely feedback to management of project progress. Risk is further minimized through the maximum use of COTS components when possible. The modular, distributed architecture required by the NWSTG ITA and employed within the NWSTG, allows phased replacement of processors and quick response to sudden, unplanned changes in requirements. The modular, distributed architecture reduces risk during implementation of updated operating systems through a phasing in of the new equipment or operating systems.

The functionality of the NWSTG is solely a government responsibility.

E. Enterprise Architecture (IT Projects Only)

The NWSTG process has evolved from the mainframe environment to its present server-centric environment in response to the rapid advances within the IT industry and to conform to the NWS ITA. The modular approach and distributed processing architecture allows incremental replacement of components as the end of life cycle is reached. Phased replacement of NWSTG components avoids spikes in budgetary actions, insures components remain capable of sustaining operations of NWSTG, and minimizing risks due to equipment failure.

The NOAA IT Architecture documentation can be found on the Internet at http://www.hpcc.noaa.gov/noaaita. Contact Mr. Ira Grossman at 301 713-3525 ext. 140 for the User ID and Password for access to this site.

F. Security and Privacy (IT projects only)

NWSTG does not process classified data. However, insuring the integrity of the data and products, which transit the facility, is paramount. NWSTG management balances the requirement to make all data and products received and distributed by the NWSTG, available with an absolute minimum of delay, and the necessity to insure the integrity of the data and products. Security is designed into all NWSTG systems rather than being added at a later stage, in accordance with NWS ITA. NWSTG management enforces a strict configuration control policy to insure that request for changes and changes are closely tracked and tested before and during development and implementation.

The FY 2003 estimate for IT security for this activity is 1%.

G. Government Paperwork Elimination Act (GPEA) (IT projects only)

NWSTG management actively supports GPEA. The NWSTG does not utilize hard copy of transactions. Transaction records are maintained only for that length of time, which is necessary to respond to requests for event reconstruction.

H. Section 508 (IT Projects only)

1. Does Section 508 Apply? __✔___Yes (go to question #2)
_____ No (go to question #3)

2. Yes, Section 508 Applies for the technical standards:
__✔___1194.21 - Software applications and operating systems
__✔___1194.22 - Web-based Intranet and Internet information and applications
__✔___1194.23 - Telecommunications products
__✔___1194.24 - Video and/or Multimedia products
__✔___1194.25 - Self contained, closed products
__✔___1194.26 - Desktop and portable computers
__✔___1194.41 - Information, documentation and support

3. No Section 508 Does Not Apply because of (choose one)
A. Exemption:

_____ 36 CFR 1194.3 (b) A fundamental alteration would be required in the nature of a product or its components *(e.g., adding a large display on a pager or palm pilot would significantly change the size; thus the nature of the product)*

_____36 CFR 1194.3(f) Products will be located in spaces frequented only by service personnel for maintenance, repair or occasional monitoring of equipment *(e.g. telecommunications equipment switches , servers)*

_____ 36 CFR 1194.2(a) Would imposed an undue burden on the agency *(Means significantly difficulty or expense)* Undue Burden documentation is required.

B. Commercial non-available:

_____ 36CFR 1194.2(b) Commercial items are not available that meet applicable technical provisions. Commercial non-available documentation is required.

PART III: COST, SCHEDULE, AND PERFORMANCE GOALS

A. Performance Based Management System (PBMS): Which performance based management system will you use to monitor contract or project progress?

NWSTG performance is tracked against the objectives of the NWS, i.e. increase the lead-time for watches and warnings, make all NWS products available across the Internet, etc. Microsoft Project is used to review and track engineering changes affecting the NWSTG. Project status is a significant part of all presentations to NWSTG management.

NWSTG management closely tracks performance of the various components of the TG. Operational availability of selected, high-profile, circuits; throughput times for selected, operationally significant, data types; and, data delivery delays and measured. Reports are prepared and presented and regularly scheduled meetings of NWSTG management. These parameters are monitored on a daily basis and significant departures are investigated and reports prepared detailing the reason(s) for the departure and operational impacts are analyzed. Information from these performance reports is used in planning future initiatives.

Project status and NWSTG operational status and performance measures are updated daily and available to project managers, NWSTG management, and NWS management.

B. Original baseline (OMB approved at project outset): Using the format of your selected PBMS, provide the following:

1. What are the cost and schedule goals for this segment or phase of this project? [i.e., what are the project milestones or events, when will each occur; and what is the estimated cost to accomplish each one]

N/A

2. What are the measurable performance benefits or goals for this segment or phase of this project? [What are the measurable performance improvements or efficiencies that you expect to achieve with this project?]

N/A

C. Current baseline (applicable only if OMB approved the changes):

1. What are the cost and schedule goals for this segment or phase of the project?
N/A

2. What are the measurable performance benefits or goals for this segment or phase of this project?
N/A

D. Actual Performance and Variance from OMB approved baseline:

1. Actual cost and schedule performance. Using the information from your PMBS, explain:
a. What work you planned (scheduled) to accomplish and how much you budgeted to complete the work.
b. What you actually accomplished and how much you actually spent.

N/A

2. Cost and schedule variance. If either the actual work accomplished or costs incurred vary from your baseline goals by 10 percent or more, explain:
a. The variance between planned and actual costs or planned and actual schedule, expressed as a percentage of the baseline goal.
b. The reason for the variance.

N/A

3. Performance variance. Explain whether, based on work accomplished to date, you still expect to achieve you performance goals. If not, explain the reason for the variance.

N/A

Capital Asset Plan (Exhibit 300) OMB A-11, FY2003 Budget Submission

E. **Corrective actions:** If actual work accomplished or costs incurred to date vary from the planned baseline goals by 10 percent or more, explain: a. What you plan to do, if anything, to correct project performance. b. What effect your action will have on overall projects cost, schedule, and performance benefits.
N/A

Capital Asset Plan (Exhibit 300) OMB A-11, FY2003 Budget Submission

PART I. A. SUMMARY OF PROJECT INFORMATION

For detailed instructions on completing the capital asset plan please see A-11 details section 300 at www.whitehouse.gov/omb

Agency	Department of Commerce
Bureau	National Oceanic and Atmospheric Administration
Account Title	
Account Identification Code	006-48-13
Program Activity	
Name of Project	National Weather Service Telecommunication Gateway Critical Infrastructure Protection (NWSTG-CIP)
Unique Project Identifier	006-48-01-12-01-1071-02

This project is __✓__ New or ___ Ongoing

Project/Useful segment is funded: ___✓___ Incrementally _____Fully

Did the Executive/Investment Review Committee approve funding for this project this year?	Yes	✔	No	
Did the CFO review the cost goal?	Yes	✓	No	
Did the Procurement Executive review the acquisition strategy?	Yes	✔	No	
Is this project information technology (see Section 53.2 for a definition)?	Yes	✔	No	
For information technology projects *only*. (The CIO must review)				
a. Is this Project a Financial Management System (see section 53.2 for a definition)?	Yes		No	✔
If so, does this project address a FFMIA compliance area?	Yes		No	
If so, which compliance area?				
b. Does this project implement electronic transactions or recordkeeping?	Yes		No	✔
If so, is it included in your GPEA plan?	Yes		No	
c. Was a privacy impact assessment performed on this project?	Yes		No	✔
d. Does the security of this project meet the requirements of the Government Information Security Reform Act (GISRA)?	Yes	✔	No	
e. Were any weaknesses identified for this project in the annual program review or independent evaluation?	Yes		No	✔

B. SUMMARY OF SPENDING FOR PROJECT STAGES

(In Millions)

	PY-1 and Earlier 2001	PY 2002	CY 2003	BY 2004	BY+1 2005	BY+2 2006	BY+3 2007	BY+4 Beyond	Total
Planning									
Budget Authority									
Outlays									
Full Acquisition									
Budget Authority	0	5.86							5.86
Outlays									
Subtotal (planning and full acquisition) (DME)									
Budget Authority	0	5.86							5.86
Outlays									
Maintenance (SS)									
Budget Authority	0	1.6	3.0	3.0	3.0	3.0	3.0	3.0	19.6
Outlays									
Total all phases (DME plus SS)									
Budget Authority	0	7.46	3.0	3.0	3.0	3.0	3.0	3.0	25.46
Outlays									

C. PROJECT DESCRIPTION
(briefly describe (less than 1/2 page) the general purpose of the project and the expected performance outcome at project completion)

PART II: JUSTIFICATION AND OTHER INFORMATION

A. Justification

This initiative provides Operations and Maintenance funding for the National Weather Service Telecommunication Gateway (NWSTG) Business Continuity Contingency Plan (BCCP). This BCCP provides the Government with a viable, tested, plan for insuring Continuity of Operations in the event of a physical attack, cyber-attack, major component failure, or catastrophic failure of the NWS Telecommunication Gateway.

The NWSTG is an essential resource of the U.S. Government as established by Presidential Decision Directive (PDD)-67, *Enduring Constitutional Government, Continuity of Government, and Continuity of Operations,* and PDD-63, *Critical Infrastructure Protection*.

The NWSTG is a critical link in the national and global infrastructure that collects and distributes weather data. The NWSTG, operating in a real-time environment, ensures NWS meets its mission to provide weather and flood warnings; public forecasts; and, advisories for the entire U.S., its territories, adjacent waters, and ocean areas. An outage of the NWSTG, for even a few hours, could result in loss of life or property and adversely effect the national security and economy.

The NWSTG is a single point of failure in the NWS' and the nation's environmental information and data acquisition and distribution system. The vulnerabilities of the NWSTG will be documented during FY01 and will serve as an input to a Business Impact Analysis (BIA). The BIA will identify vulnerabilities to the operation of the NWSTG and quantify their impact. This initiative [NWSTG CIP] will result in a strategy that will mitigate or eliminate those vulnerabilities through the establishment of a BCCP and satisfy Federal guidelines. The initiative will include issuing of procurements for hardware, software, telecommunications, facilities, and contractors during FY02.

The National Weather Service Telecommunication Gateway services a national and international community of customers. Increases in the ability of the meteorologist to predict severe weather and thus provide protection of life and property is based, in large part, on tremendous increases in the resolution of meteorological models which, in turn, are due to availability and timeliness of source data. NWSTG Return on investment is not totally realized unless the raw and processed information is available to the user community.

The cost benefit of increasing the ability of the NWSTG to collect and distribute information and the steady state presence of the NWSTG is significant. Increases in the quality, quantity, and timeliness of weather data illustrate this fact. Some of the areas in which these savings may be realized and quantified are: airline operations; emergency planning for large-scale weather events; and, agricultural and economic interests.

Weather is the largest single contributor to delays in civil airline operations and is a major factor in aircraft accidents and incidents. At a recent workshop hosted by the FAA, it was revealed that 68% or $6 billion of the annual cost of delays in a recent year were directly traceable to weather. The NWSTG will contribute to the reduction of these delays by providing more timely observations from the larger base of surface observations to the FAA for use by air traffic controllers; to the NWS for use in the new, improved atmospheric models and in developing warnings and advisories; and, to the airlines themselves for planning purposes.

Studies commissioned by the FAA to support the development of the Weather and Radar Processor (WARP) and the Integrated Terminal Weather System (ITWS) determined that the most important benefit of WARP and ITWS are attributable to their capability to provide air traffic management with accurate and timely weather information. Both of these systems [WARP and ITWS] derive their information from their ability to integrate current weather data with the latest atmospheric models. The NWSTG, through the FAA Bulk Weather Telecommunication Gateway (FBWTG), will provide the preponderance of the weather data including the atmospheric models, latest radar information, and observations and terminal forecasts for these key systems.

As population grows along the coast of the Gulf of Mexico, the Atlantic Ocean, and throughout the Caribbean basin, the cost of emergency evacuation increases. Coastal communities are increasingly vulnerable to strikes from hurricanes and tropical storms. The cost of a poor forecast of a landfall is measured in the millions if not billions of dollars as well as the decreased confidence of the public. Satellite pictures provide only one data point in determining the latest position and forecast track of these dangerous storms. NWSTG is the gateway through which the information from hurricane reconnaissance aircraft, radar, and automated observing systems is acquired and relayed to users, and the National Hurricane Center (NHC).

The increases in the density of surface observations due to automation and development and deployments of Doppler radar have contributed to the increases in the accuracy and resolution of the atmospheric models produced by NWS as well as the ability to issue warnings and advisories. These improvements are of little value if the data is not placed in the hands of the user in a timely manner. The NWSTG assumed responsibility for collecting, collating, and making available the meteorological radar reports from NWS Doppler weather radars from the commercial providers. An outage of this service for even a short period time could result in the loss of life or property due to insufficient warning of severe weather.

The military, due to recent budget reductions and manpower shortages, now finds that the NWSTG provides more than 50% of the surface whether observations and forecasts received daily. For some areas, such as central Africa, the loss of the NWSTG would result in a significant degradation of information such that military mission capability in those areas would be seriously threatened.

The NWSTG is housed within a general office building complex and the operations area is located within general office space converted into a computer operations area. The Silver Spring Metro Center complex, of which this general office building is a part, is rated as a level IV building for security purposes based upon a Justice Department study. However, physical security is compromised by the complex's proximity to a main railroad corridor and the major intersection of two, heavily traveled, public highways. In addition, much of the building's physical infrastructure supporting the NWSTG is approaching the end of its useful life. Other considerations requiring the development of a BCCP include single points-of-presence for telecommunications and single feeds for the electrical power to the Silver Spring complex.

The proximity of the NWSTG to major transportation corridors, manmade and natural hazards, as well as the large amount of construction going on in the local area result in increased vulnerability and risk to the NWSTG.

A.1. Does the investment support core/priority mission functions that need to be performed by the Federal Government?

Yes. Legislative mandates require NOAA provide environmental monitoring, assessment, and prediction service to the U.S. Public. The NWSTG is a critical element allowing NWS, as the NOAA agent, to perform its core mission of protecting life and property. The NWSTG has been identified as an essential government resource in PDD-67. The NWSTG CIP initiative insures the continuation of an essential NWS core function.

A.2. Does the investment need to be undertaken by the requesting agency because no alternative private sector or governmental support exists?

Yes. The NWSTG is critical to the collection of information from which warning and advisory products are developed and to the distribution of those warnings and advisories as well as a myriad of other hydrometeorological products. The NWSTG assumed the responsibility for the collection and compilation of the national Doppler weather radar database. Only NOAA, through the NWSTG, has the necessary functionality to perform this mission. No other government agency has the necessary capabilities to perform this mission. The nation would suffer a notable impact to its economy if the NWSTG were out of service for any period.

A.3. Does the investment support work processes that have been simplified or otherwise redesigned to reduce costs?

Yes. The NWSTG IT architecture is undergoing a process re-engineering effort. This re-engineering will move the NWSTG from the current mainframe processing system to a client/server architecture. The client/server architecture will distribute processes across a modular and scalable design allowing continuous improvement without the necessity for purchasing a complete suite of processors. Modular design will also insure that the failure of a single component is less likely to result in the complete failure of the NWSTG. In addition, creation of a backup capability lessens the risk of a failure while the NWSTG legacy systems are upgraded. NWS/OOS management is committed to the maximum use of commercial, off-the-shelf, technology to reduce cost, lessen development and implementation time, and reduce developmental risk.

A.4. FY 2003 Proposed Actions.

During FY00, a study was undertaken to develop strategy to mitigate the single points of failure within the design of the AWIPS component of the NWSTG. This study proposes establishing an alternate site for the AWIPS Network Control Facility (AWIPS NCF), an important function of the NWSTG. One of the requirements for the alternate NCF facility was that it be of sufficient size to support future inclusion of the remaining NWSTG functions. During FY01, NWS is conducting a formal vulnerability assessment of the NWSTG including defining minimal essential infrastructure (MEI), interviewing affected process owners and users to identify MEI vulnerabilities, and analyzing and prioritizing vulnerabilities; conducting a business impact analysis including using defined vulnerabilities from the vulnerability assessment to then assign a measure of the impact of MEI loss, and, based on this assessment, establishing a maximum acceptable downtime (MADT) to determine what corrective actions to mitigate loss are required and, at what cost; and, completing a business continuity contingency plan based on the BIA.

NWS will implement the BCCP in FY2002 including: procuring, installing, and testing of backup NWSTG equipment at the selected alternate site (communications switches, local area networks, routers, servers $4.7 million); providing telecommunications services to and from the alternate site ($1.4 million); and, providing support services for system maintenance ($1.4 million). NWSTG management will serve as the systems integrator obviating the need for additional, large contracts. Full operations and maintenance of the backup NWSTG will begin in FY 2003.

This initiative will provide funding for the Operations and Maintenance of the alternate operations facility during FY2003. During the year NWS will exercise the BCCP with regularly scheduled tests and recurrent periods of activation to insure site availability and verify BCCP concept of operations.

A.7. FY 2003 Budget Summary.

+$3,000,000

B. Program Management

Have you assigned a program manager and contracting officer to this project? If so, what are their names?

C. Acquisition Strategy

Explain how your acquisition strategy will manage or mitigate projects risks:

1. Will you use a single contract or several contracts to accomplish this project? If multiple contracts are planned, explain how they are related to each other, and how each supports the project performance goals.

2. What type(s)of contract will you use (e.g. cost reimbursement, fixed-price, etc.)?

3. Will you use financial incentives to motivate contractor performance (e.g. incentive fee, award fee, etc.)?

4. Will you use competition to select suppliers?

5. Will you use commercially available or COTS products, or custom-designed products?

The equipment and telecommunications fit of the alternate site will mirror the primary NWSTG facility. Acquisition of equipment and telecommunication services will reflect equipment changes made to the primary site. Commercial, off-the-shelf, components will be used in the alternate facility to reduce cost, lessen development and implementation time, and reduce developmental risk. A technology refresh cycle will be established to review future needs of the facility. Hardware will be replaced on an incremental basis to respond to mission, technology, and requirements changes.

Operations and maintenance costs will be for support services only. The government as the systems integrator of the original site will continue to integrate systems at the alternate site, thereby obviating the need for large, competitive, contracts.

D. Alternatives Analysis and risk management

1. Summarize the results of any life-cycle cost analysis performed for this investment, and describe what alternatives you considered and the underlying assumptions.

2. Summarize the results of any benefit/cost or return on investment analysis of alternatives. (Describe any tangible returns that will benefit your agency even of they are difficult to quantify.)

3. Describe the results of your risk assessment for this project and discuss your plans to eliminate, mitigate or manage identified risks, e.g. financial, acquisition, technical.

4. For IT, explain replaced system savings and savings recovery schedule.

The use of an alternate site which mirrors the primary site substantially reduces the technical, programmatic and schedule risks associated with this initiative. The primary technical risks to the NWSTG are sudden, unanticipated declines in equipment or communications availability at the primary site and sudden, large, or unforeseen increases in requirements or data volumes. These risks exist for the alternate NWSTG inasmuch as it is a mirror of the primary site. These risks will be mitigated through close coordination with customers and suppliers of data.

NWSTG management will institute a comprehensive training and testing program to insure that personnel tasked with supporting the BCCP are well acquainted with all facets of the plan. Ongoing, regularly scheduled, and ad hoc testing programs will serve to exercise the BCCP and identify areas needing attention. These steps will substantially reduce the supportability risk. Risk associated with cost will be controlled by aggressive use of the NWS Configuration Management program to insure that all changes are reviewed and approved prior to implementation.

D.1. Alternatives.

The NWSTG alternate site will be operated as a "warm, dark site." That is, personnel will not be on-site, but equipment will be powered and receiving data at all times. When the BCCP is activated, 2-way telecommunications will be initiated at the alternate site and personnel to operate the site will be dispatched. Therefore, utilizing other government agencies or the private sector is not appropriate.

NWS management reviewed decisions taken as a result of earlier studies regarding the most cost beneficial solutions to NWSTG Critical Infrastructure Protection and determined that the current solution, an alternate site maintained in a warm, dark state, is the most cost beneficial. Alternatives previously studied were out-sourcing, sharing/collocation with other government sites, parallel processing site, hardening the current site, and maintaining the status quo.

E. Enterprise Architecture (IT Projects Only)

The incorporation of a modular design in the basic design of the alternate NWSTG supports the NWS IT architectural plan to migrate to practices that are consistent with and take advantage of current industry best practices and emerging technologies. The alternate NWSTG will be an integral component of NWS IT Architecture.

The development of a BCCP during the NWSTG transition to a modular architecture will result in an integrated, interoperable, standardized, and secure NWSTG. The BCCP will adhere to all IT architecture standards applicable to the NWS IT architecture.

COTS software is used whenever possible to reduce the burden of development and maintenance. Reliance on custom-built hardware will be significantly reduced and/or eliminated whenever possible to increase adherence to industry best practices and reduce maintenance costs. Off-the-shelf hardware will be used in all new implementations. All algorithms, software, and hardware changes are carefully controlled

through a rigorous configuration management process. Software is modular and changes are tested at a prototype stage in a non-operational, testing environment, before implementation.

NOAA's IT Architecture documentation can be found on the Internet at http://www.hppcc.noaa.gov/noaaita. Contact Mr. Ira Grossman at (301) 713-3525 ext.140 for the User ID and Password for access to this site.

F. Security and Privacy (IT projects only)

NOTE: Referring to security plans or other documents is not adequate.

Discuss the security plan for this project and:

1. demonstrate that the costs of security controls are understood and are explicitly incorporated in the life-cycle planning of the overall system, including the additional costs of employing standards and guidance more stringent than those issued by NIST;
2. demonstrate how the agency ensures that risks are understood and continually assessed;
3. demonstrate how the agency ensures that the security controls are commensurate with the risk and magnitude of harm;
4. identify additional security controls for systems that promote or permit public access, other externally accessible systems, and those that are interconnected with systems over which program officials have little or no control;
5. demonstrate how the agency ensures the effective use of security controls and authentication tools to protect privacy for those systems that promote or permit public access; and
6. demonstrate how the agency ensures that the handling of personal information is consistent with relevant government-wide and agency policies.

The NWSTG does not process classified data. However, due to the critical nature and high value of the data to Nation's security and economic well-being, the integrity of the data and the availability of the NWSTG must be insured at all times. To meet these stringent requirements, strict measures are in-place to isolate the NWSTG processors from external sources. As the BCCP implements an alternate operating site for the NWSTG, security measures implemented for the primary site will be in-place at the alternate site as well. Operations will be continually monitored for indications of potentially harmful activities. This results in an extremely secure operating environment.

The implementation of a Business Continuity Contingency Plan for the NWSTG will substantially contribute to the security of the NWSTG. A current and tested BCCP will insure a high availability for the NWSTG in all threat environments.

The implementation of a BCCP for the NWSTG supports Presidential Decision Directive (PDD) - 67, *Enduring Government, Continuity of Government*, and PDD - 63, *Critical Infrastructure Protection*.

The entire cost of the NWSTG BCCP initiative can be considered as devoted to security, as the initiative satisfies the requirements set forth in PDD-63 and PDD-67.

The NWSTG adheres to OMB Memorandum M-00-13 *Privacy Policies and Data Collection on Federal Web Sites*. Only that information necessary to determine, at a high level, the originators of requests for data from the NWSTG web site is collected. The NWSTG alternate site established as part of the BCCP will also adhere to that standard.

The estimated percentage of the total investment for FY 2003 associated with IT security for the NWSTG-CIP is 3%.

G. Government Paperwork Elimination Act (GPEA) (IT projects only)

If this project supports electronic transactions or record keeping, briefly describe the transaction or record keeping functions and how this investment relates to your agency's GPEA plan. Identify any OMB Paperwork Reduction Act control numbers from information collections that are tied to this investment.

The NWS actively supports the implementation of the GEPA. The NWSTG does not utilize hardcopy in the collection and distribution of hydrometeorological data. A record of all message transactions is maintained for the minimum amount of time necessary to insure the agency's ability to satisfy all requests for information to support event reconstruction. The same scheme employed at the NWSTG will be instituted at any alternate site during the implementation of the BCCP.

H. Section 508 (IT Projects only)

1. Does Section 508 Apply? _____Yes (go to question #2)
_____ No (go to question #3)

2. Yes Section 508 Applies for the technical standards:
_____1194.21 - Software applications and operating systems
_____1194.22 - Web-based Intranet and Internet information and applications
_____1194.23 - Telecommunications products
_____1194.24 - Video and/or Multimedia products
_____1194.25 - Self contained, closed products
_____1194.26 - Desktop and portable computers
_____1194.41 - Information , documentation and support

3. No Section 508 Does Not Apply because of (choose one)
A. Exemption:

_____ 36 CFR 1194.3 (b) A fundamental alteration would be required in the nature of a product or its components *(e.g., adding a large display on a pager or palm pilot would significantly change the size; thus the nature of the product)*

_____36 CFR 1194.3(f) Products will be located in spaces frequented only by service personnel for maintenance, repair or occasional monitoring of equipment
(e.g. telecommunications equipment switches , servers)

_____ 36 CFR 1194.2(a) Would imposed an undue burden on the agency
(Means significantly difficulty or expense)
Undue Burden documentation is required.

B. Commercial non-available:

_____ 36CFR 1194.2(b) Commercial items are not available that meet applicable technical provisions. Commercial non-available documentation is required.

PART III: COST, SCHEDULE, AND PERFORMANCE GOALS

A. Performance Based Management System (PBMS):

Which performance based management system will you use to monitor contract or project progress?

The NWSTG management maintains an immediate awareness of project status through aggressive monitoring of project progress. Monitoring is achieved through use of project management tools, monthly program reviews, and regular systems status reviews as well as scheduled and ad hoc testing of the BCCP. These reviews and testing insure early identification of project impacts on other NOAA and NWS IT projects, changes in technology, problem areas, and potential program impacts. Early identification of problems allows implementation of measures to take advantage of technology, integrate other NOAA and NWS programs, and/or mitigate effects of identified problems.

Key Project Schedule Milestones for Implementation.

Significant milestones of the BCCP project will be:

- 4QFY01 - Completion of the business continuity contingency plan (BCCP);
- FY02 - Implementation of the BCCP;
- and,
- FY03 - Successful test of the BCCP carrying out all aspects of the plan.

B. Original baseline (OMB approved at project outset): Using the format of your selected PBMS, provide the following:

1. What are the cost and schedule goals for this segment or phase of this project?
[i.e., what are the project milestones or events, when will each occur; and what is the estimated cost to accomplish each one]

Original cost and schedule goals.

The NWSTG Business Continuity Contingency Plan initiative will be implemented in FY2002, for cost of $7.46M. The initial schedule calls for Initial Operating Capability of the NWSTG BCCP to be achieved late in FY2002. This activity will consist of equipment acquisition, telecommunication installation, and operational testing prior to declaring the site operational.

Original performance goals.

Completion of vulnerability analysis and business impact analysis - FY01
Implementation of NWSTG BCCP - FY02

2. What are the measurable performance benefits or goals for this segment or phase of this project?
[what are the measurable performance improvements or efficiencies that you expect to achieve with this project?]

C. Current baseline (applicable only if OMB approved the changes):

Using the format of your selected PBMS, provide the following:

1. What are the cost and schedule goals for this segment or phase of the project?

2. What are the measurable performance benefits or goals for this segment or phase of this project?

D. Actual Performance and Variance from OMB approved baseline:

1. Actual cost and schedule performance. Using the information from your PMBS, explain:
   a. What work you planned (scheduled) to accomplish and how much you budgeted to complete the work.
   b. What you actually accomplished and how much you actually spent.

2. Cost and schedule variance. If either the actual work accomplished or costs incurred vary from your baseline goals by 10 percent or more, explan:
   a. The variance between planned and actual costs or planned and actual schedule, expressed as a percentage of the baseline goal.
   b. The reason for the variance.

3. Performance variance. Explain whether, based on work accomplished to date, you still expect to achieve your performance goals. If not, explain the reasons for the variance.

E. Corrective actions:

If actual work accomplished or costs incurred to date vary from the planned baseline goals by 10 percent or more, explain:
   a. What you plan to do, if anything, to correct project performance.
   b. What effect your action will have on overall projects cost, schedule, and performance benefits

Capital Asset Plan (Exhibit 300) OMB A-11, FY2003 Budget Submission

PART I. A. SUMMARY OF PROJECT INFORMATION

For detailed instructions on completing the capital asset plan please see A-11 details section 300 at www.whitehouse.gov/omb

Agency	Department of Commerce (DOC)
Bureau	National Oceanic and Atmospheric Administration
Account Title	Procurement, Acquisition and Construction (PAC)
Account Identification Code	13X1460
Program Activity	PAC, Satellite Observing Systems (POES)
Name of Project	Polar-orbiting Operational Environmental Satellite (POES)
Unique Project Identifier	0006-48-01-12-01-1060

This project is ____ New or ___X__ Ongoing

Project/Useful segment is funded: _____ Incrementally _____X___Fully

Did the Executive/Investment Review Committee approve funding for this project this year?	Yes	X	No	
Did the CFO review the cost goal?	Yes	X	No	
Did the Procurement Executive review the acquisition strategy?	Yes	X	No	
Is this project information technology (see Section 53.2 for a definition)? Satellite: No, Ground System: 20 %	Yes		No	X
For information technology projects *only*. (The CIO must review)				
a. Is this Project a Financial Management System (see section 53.2 for a definition)?	Yes		No	X
If so, does this project address a FFMIA compliance area?	Yes		No	
If so, which compliance area?				
b. Does this project implement electronic transactions or recordkeeping?	Yes		No	X
If so, is it included in your GPEA plan?	Yes		No	
c. Was a privacy impact assessment performed on this project?	Yes		No	X
d. Does the security of this project meet the requirements of the Government Information Security Reform Act (GISRA)?	Yes		No	X
e. Were any weaknesses identified for this project in the annual program review or independent evaluation?	Yes	X	No	

B. SUMMARY OF SPENDING FOR PROJECT STAGES

(In Millions)

	2000 and Earlier	2001	2002	2003	2004	2005	2006	2007 and Beyond	Total
Planning									
Budget Authority									
Outlays									
Full Acquisition									
Budget Authority		136.7	146.3	122.3	116.0	74.7	61.2	95.2	745.6
Outlays	1,339.4								1,339.4
Subtotal (planning and full acquisition) (DME)									
Budget Authority		136.7	146.3	122.3	116.0	74.7	61.2	95.2	745.6
Outlays	1,339.4								1,339.4
Maintenance (SS)									
Budget Authority									
Outlays									
Total all phases (DME plus SS)									
Budget Authority		136.7	146.3	122.3	116.0	74.7	61.2	95.2	745.6
Outlays	1,339.4								1,339.4

C. PROJECT DESCRIPTION

(briefly describe (less than 1/2 page) the general purpose of the project and the expected performance outcome at project completion)

The NOAA Polar satellites (with the European assets) are expected to meet NOAA's mission objectives through 2010. NOAA maintains a system of polar-orbiting operational environmental satellites (POES) with the mission objective of providing an uninterrupted flow of global data environmental information for a wide range of Federal agencies, state and local governments, and private users. This requires two satellites on orbit to allow for continuous coverage during the time it takes to launch a replacement satellite. NOAA's polar-orbiting satellites provide important global information used in numerical weather models and as such are a key component to NOAA's Strategic Plan element, Advance Short-term Warning and Forecast Services. This element supports the Department's Strategic Plan Theme I: "Build for the future and promote U.S. competitiveness in the global marketplace, by strengthening and safeguarding the nation's economic infrastructure." The current acquisition program consists of five satellites designated as NOAA K-N'. NOAA-K was successfully launched in May 1998. Each on-orbit satellite (including its launch cost) has an approximate value of $300 million. In addition two sets of POES instruments are being procured to fly on European polar-orbiting METOP satellites starting no earlier than 2003 under a joint cooperative program.

PART II: JUSTIFICATION AND OTHER INFORMATION

A. Justification

The need for this capital project should be demonstrated by answering the following questions:

1. How does this investment support your agency's mission and strategic goals and objectives?

NOAA's polar-orbiting satellites provide important global information used in numerical weather models and as such are a key component to NOAA's Strategic Plan element, Advance Short-term Warning and Forecast Services. This element supports the Department's Strategic Plan Theme I: "Build for the future and promote U.S. competitiveness in the global marketplace, by strengthening and safeguarding the nation's economic infrastructure."

2. Is this investment included in your agency's annual performance plan?

Yes

3. How does this investment support a core or priority function of your agency?

NESDIS is responsible for the operation and maintenance of the NOAA Polar satellite control ground systems. Primary responsibilities fall into three categories: satellite health and safety; meteorological data reception and dissemination; and data archiving. Since the NESDIS Satellite Operations Control Center (SOCC) in Suitland, MD is equipped with just receive only antennas, SOCC monitors and controls the spacecraft via antennas located at the Wallops Command and Data Acquisition Station (CDAS) in Wallops, Virginia and Fairbanks CDAS in Fairbanks, Alaska. The Wallops facility is also equipped to perform many of SOCC's functions in case of a failure.

4. Are there any alternative sources,in the public or private sectors,that could perform this function?
   If so,explain why your agency did not select one of these alternatives.

No

5. How will this investment reduce costs or improve efficiencies?

Continuous global atmospheric temperature and humidity values from the POES satellites are critical input for quality mid- (3-5 day) and long-range NWS and international meteorological center temperature, precipitation and snow forecasts. These satellites also monitor the global sea surface temperature indicating the location, onset and severity, of such events as El Nino, as early as possible. Longer lead times of these impending events allow emergency and agricultural managers to activate plans to reduce the impact of floods, landslides, evacuations and droughts for potential crop loss.

The high resolution imagery (1 km) provided by these satellites can detect volcanic eruptions, hurricane centers, oil spills and wild and man-made fires. Alaska, out of range of GOES imagery, critically depends on POES pictures for tracking 45 potential volcanoes for ash plumes and supports scheduling of the FAA's heavy trans-polar freight and passenger flights. Additionally these satellites detect different vegetation growth allowing for detection of drought conditions and insect migrations used by USAID reducing impact to life and property. Global snowfall amounts are continuously
measured for the NWS and Canadian Hydrology Centers to predict the intensity and locations of the spring melt of the northern tier snow pack causing expensive regional and localized flooding within North America.

These satellites also monitor our ozone layer and detect the onset of the Antarctic Ozone Hole. Deterioration of this layer impacts our global circulation patterns causing climatic changes and its reduction is related to skin cancers and radiation exposure. These satellites also monitor the solar cycle, sun flares and spots allowing power companies to reconfigure systems to avoid massive outages.

POES Search and Rescue instruments detect signals world-wide from any air and marine craft in distress. With cold ocean temperatures and low survivability percentages, this data is critical for the US Coast Guard and other rescue agencies in pinpointing the location of downed craft. To date over 10,000 people have been rescued by this system.

B. Program Management

Have you assigned a program manager and contracting officer to this project? If so, what are their names?

Program Manager: Mike Mignogno, NOAA NESDIS Office of Systems Development (OSD)
Satellite Contract Officer: Richard Brooks, NOAA NESDIS Office of Systems Development (OSD)
Ground Systems Contract Officer: Mike Knowles, NOAA Systems Acquisition Office (SAO)

C. Acquisition Strategy

Explain how your acquisition strategy will manage or mitigate projects risks:

1. Will you use a single contract or several contracts to accomplish this project? If multiple contracts are planned, explain how they are related to each other, and how each supports the project performance goals.

Spacecraft and Launch: NASA serves as NOAA's acquisition agent for the procurement of the POES system. NASA has divided the acquisition into several components and has competed each element with industry. These elements include the procurement of the satellite (which includes the satellite assembly, integration of the instruments and system level testing), procurement of the flight instruments (which are government equipment furnished by NASA to the spacecraft vendor), and procurement of the launch vehicle and services. Due to the many specialized components used in developing an environmental observing satellite and the relatively low production volume of these assets, cost-type contracts have proven to be most effective and efficient for the government. With the larger dollar value procurement elements, NASA's contracts require these vendors to maintain a performance-base management reporting system.

Ground System: Acquisitions are conducted through various contract vehicles, usually through fully open competition via request for proposal. Incentive awards apply to some major acquisitions – the ground system IT component upgrade acquisitions are not structured for incentive awards. COTS and software reuse are encouraged in all acquisitions; proposal evaluation criteria include the effective use of COTS and heritage software. Key milestones in ground system component acquisitions are the launches of new satellites. Upgrades to the ground system in preparation for a new satellite typically require a two year lead time in advance of the scheduled launch. Launch delays, if scheduled before ground system acquisitions are under contract, can allow a postponement of a ground system upgrade to the following fiscal year. A less outstanding but more common driver for a component upgrades is the obsolescence by the component manufacturer, i.e., an announcement that the manufacturer will no longer support the product, either by new spacecraft requirements, often forces the simultaneous upgrade of other components for operational compatibility.

2. What type(s)of contract will you use (e.g. cost reimbursement, fixed-price, etc.)?

Spacecraft and Launch: Due to the many specialized components used in developing an environmental observing satellite and the relatively low production volume of these assets, cost contracts have proven to be most effective and efficient for the government.

Ground System: Acquisitions are conducted through various contract vehicles, usually through fully open competition via request for proposal.

3. Will you use financial incentives to motivate contractor performance (e.g. incentive fee, award fee, etc.)?

Incentive awards apply to some major acquisitions. In general, ground system IT component upgrade acquisitions are not structured for incentive awards.

4. Will you use competition to select suppliers?

Acquisitions are conducted through various contract vehicles, usually through fully open competition via request for proposal. COMMITS is used where possible for software support services. For major procurements, RFIs and bidder's conferences are used to perform market research.

5. Will you use commercially available or COTS products, or custom-designed products?

COTS and software reuse are encouraged in all acquisitions. Proposal evaluation criteria include the effective use of COTS and heritage software.

D. Alternatives Analysis and risk management

1. Summarize the results of any life-cycle cost analysis performed for this investment, and describe what alternatives you considered and the underlying assumptions.

Compared to other means such as aircraft, ships and fixed observation platforms, satellites are the most economical means to acquire global data in a timely fashion at medium to high resolution on a daily basis for use in numerical weather forecast models and other environmental monitoring and prediction activities.

2. Summarize the results of any benefit/cost or return on investment analysis of alternatives. (Describe any tangible returns that will benefit your agency even of they are difficult to quantify.)

NOAA satellites supply 85% of the data that goes into the NWS's numerical analysis models used in the nation's weather broadcasts. Coupled with digital compression technology on the ground, today's satellites are more than 500 times more cost efficient than those built in the 1980s. On average, satellites launched last year were more than twice as powerful as those just five years ago and average 7,000 watts of power. GOES satellites are worth $300M each. The satellite health and safety monitoring as well as telemetry command and control functions of the ground system help ensure that the satellite is kept operational.

3. Describe the results of your risk assessment for this project and discuss your plans to eliminate, mitigate or manage identified risks, e.g. financial, acquisition, technical.

Life cycle studies are in progress to revise the cost of maintaining/storing POES satellites. The impact of the purchase of Compac by Hewlett Packard is also being studied.

Participation with the Windsat/Coriolis and Jason program is in the planning phase and will help NESDIS prepare for the NPOESS and METOP series of satellites.

4. For IT, explain replaced system savings and savings recovery schedule.

The life expectancy of a weather satellite is five years. Satellites are launched in advance of the need and placed into a storage orbit until needed to minimize cost and program risk.

E. Enterprise Architecture (IT Projects Only)

1. Does this project support your agency's current architecture or is it part of a modernization initiative?

The satellite control ground system IT architecture was established prior to the launch of the current series of satellites. Each upgrade is in conformance with and is a continuation of established ground system architecture. Refinements to the architecture are applied along with the technological evolution of major component manufacturers (e.g., DEChub vs. ethernet vs. X.25). Major perturbations in the architecture are avoided to save cost in equipment and labor, maximize return on the current investment, and reduce risk to the satellites. The satellite operations portions of the POES and GOES ground systems are built on the same architecture, providing a consistent environment for spacecraft operators and both government and vendor personnel who maintain ground system hardware and software, affording cost efficiencies in the number of personnel required and in their technical skills inventory.

2. Explain how this project conforms to:
   a. your agency's technology infrastructure; and

The POES satellite control ground system complies with published NESDIS standards on software development and documentation, ground system hardware and cabling, training, human-machine interfaces, and database interfaces. NESDIS writes an annual IT plan. Every ground system procurement must be consistent with this plan to be approved.

   b. the Federal Enterprise Architecture Framework (FEAF),if used for this project. If you are not following the FEAF, explain why and describe which framework you are using.

The NESDIS IT Architecture Plan is a living document annually updated. The base architecture was documented for the DOC/NOAA/NESDIS IT architecture efforts completed in June 2000. A Federal Enterprise Architecture Framework (FEAF) was followed. A Technical Reference Model (TRM) was developed in June 2001.

The NOAA's IT Architecture documentation can be found on the Internet at http://www.hpcc.noaa.gov/noaaita . Contact Mr. Ira Grossman at 301/ 713-3525 ext. 140 for the User ID and Password for access to this site.

F. Security and Privacy (IT projects only)

Approximately 0.002% of the FY 2003 is being devoted to ensure proper security is developed and maintained. The majority of IT security functions/software are funded by NOAA orDOC, not by the individual programs/offices.

Satellites and launches: N/A

Ground Systems:

NOTE: Referring to security plans or other documents is not adequate.

Discuss the security plan for this project and:

1. demonstrate that the costs of security controls are understood and are explicitly incorporated in the life-cycle planning of the overall system, including the additional costs of employing standards and guidance more stringent than those issued by NIST;

Many security requirements originate from NIST and implementation of security controls which are more stringent than those of NIST are not sought unless required for national security. Since those instances are rare, NESDIS has minimal need for costing implementations more stringent than NIST standards and guidance. Physical security measures are separately developed by GSA for the new operations facilities (i.e. the SOCC expansion and the NSOF)

2. demonstrate how the agency ensures that risks are understood and continually assessed;

The current POES Ground System Security Plan was approved by NOAA in 1997. A revised version is pending approval. NSA conducted a vulnerability assessment at the SOCC and CDAs for NESDIS in FY99. Disaster recovery plans were revised as a result of that assessment. NOAA complies with the applicable NIST Security Guidance. Weaknesses identified as a result of recent OSDfunded security audits are being prioritized for correction. Penetration testing of the networks is in the planning stages.

3. demonstrate how the agency ensures that the security controls are commensurate with the risk and magnitude of harm;

NESDIS is presently in the process of reevaluating security requirements and security controls for all major applications and support systems. NESDIS is generating the new risk assessment using the NOAA supplied TS2000 COTS security plan package as part of the system accreditation process.

4. identify additional security controls for systems that promote or permit public access, other externally accessible systems, and those that are interconnected with systems over which program officials have little or no control;

N/A The ground system is a closed system.

5. demonstrate how the agency ensures the effective use of security controls and authentication tools to protect privacy for those systems that promote or permit public access; and

N/A The ground system is a closed system.

6. demonstrate how the agency ensures that the handling of personal information is consistent with relevant government-wide and agency policies.

N/A The ground system is a closed system.

G. Government Paperwork Elimination Act (GPEA) (IT projects only)

If this project supports electronic transactions or record keeping, briefly describe the transaction or record keeping functions and how this investment relates to your agency's GPEA plan. Identify any OMB Paperwork Reduction Act control numbers from information collections that are tied to this investment.

N/A

H. Section 508 (electronic and information technology)

Satellite and Launch:
Does Section 508 Electronic and information technology Accessibility Standards apply? YES _____ NO _X_____ If "Yes", how. If "NO", why not.
Satellites are not considered IT.

Ground Systems:

Does Section 508 Electronic and information technology Accessibility Standards apply? YES __X____ NO _____ If "Yes", how. If "NO", why not.

PART III: COST, SCHEDULE, AND PERFORMANCE GOALS

A. Performance Based Management System (PBMS):

Which performance based management system will you use to monitor contract or project progress?

Performance monitoring of the Polar Satellite Acquisition is primarily performed through semi-annual updates to NASA's Project Operating Plan (POP). The POP, which is submitted formally to NOAA/SAO, reports on the production status of each satellite, it's expected delivery date, costs accrued to-date, and cost and budget requirements projected for the current and future fiscal years through to completion. The POP includes, and separately addresses, the costs and schedules associated with satellite prime contract (NOAA-K, -L, -M, -N, -N'), the instruments which are to be installed on the satellite, and the launch vehicles. Additionally, the POP addresses the cost and schedule for the instruments being procured in support of the Initial Joint Polar System, which will be flying NOAA-provided instruments on two European-built satellites, MetOp-1 and MetOp-2. The POP responds to any updated NOAA requirements with regard to planned satellite launch dates or funding availability. Generally this NOAA guidance is based on the current Presidents Budget, or OMB Budget submission, which ever is appropriate at the time. Additionally, existing NASA performance management tools and mechanisms are utilized, and monitored by NOAA/SAO to track elements within the program. For example, the major contracts for the spacecraft and several of the instruments utilize formal earned-value performance evaluation systems which provide quantitative information on work completed and comparisons to the planned schedule and cost. Additionally, NASA performs an Independent Annual Review (IAR) of the program which evaluates cost and schedule performance of the program as a whole. This IAR information is provided to NOAA/SAO, who also participates in the NASA Management Reviews.

Metrics to indicate success: Data continuity, scheduled launches, and health and safety of satellites are metrics. A launch delay or the less than full use of a satellite's capabilities caused by the ground system not being ready to accommodate it, constitute a failure of the ground system; as does the loss of data, the degradation of data quality, or the reduction in the timeliness of product delivery (severe storm warnings, Search and Rescue response). Without these upgrades current satellites are subjected to increasing risk as the ground system reliability is degraded and future satellites will be
launched without any practical means of accessing their improved performance capabilities in speed, accuracy, and sensitivity

Post Implementation Reviews and Actions: NOAA and NASA jointly use performance management information and on-orbit performance of the satellites to ensure that each satellite in the series will meet the mission objectives and requirements for which it was procured. On-orbit anomalies of instruments or spacecraft subsystems are addressed and remedial action is taken, if deemed appropriate, before the launch of the next satellite.

Ground system upgrades are scheduled in accordance with satellite launches. Development projects require a series of reviews, including Requirements Review, Preliminary Design Review, and Critical Design Review. Development projects with multiple build stages require a test and demonstration at the completion of each build.

How are satellite requirements developed?

System requirements are developed through input and close coordination with NOAA's national operational environmental users, e.g., National Weather Service, National Ocean Service, Office of Ocean and Atmospheric Research. In addition, NOAA solicits requirements from the civil user community, the Department of Defense and other public sector users. Requirements are vetted, concept and formulation studies are performed, and an operational requirements document is developed which is the basis for the technical specifications used by the contractors to procure and build the satellite system.

1. How does the satellite procurement strategy ensure requirements are met?

NASA partners with NOAA and is the procurement agent for POLAR K-N' satellites. NOAA and NASA hold preliminary design and detailed design reviews for the spacecraft, satellite instruments and ground components comprising the entire satellite system. These reviews focus on how a component developer (contractor) complies with technical specifications and operational requirements. Each component must successfully complete a detailed design review before its development can proceed into the manufacturing and integration and test phases.

Each contract defines measurable performance requirements. Contractors respond with a Performance Verification Matrix, which must be approved by the government, defining how compliance with each requirement is achieved, e.g., test, analysis, heritage. This matrix is closely monitored throughout the review process.

2. How is the actual satellite performance evaluated against requirements?

Prior to shipment of the satellite to the launch site, a formal Pre-ship Review is conducted where all ground test data is reviewed for compliance. All non-compliance waivers to requirements must be agreed to and signed off prior to shipment.

Prior to each POES launch NOAA and NASA review and revise an On-orbit Verification (OV) plan used to initially test the satellite subsystems and instrument data streams. NASA executes the OV plan during the first 45 days to evaluate system performance against requirements. NOAA accepts the system after successful completion of the OV plan and begins an evaluation of its product systems. Each product derived from the system is monitored by a Product Oversight Panel consisting of research and operations personnel. If a product anomaly reveals a potential problem with the spacecraft or an instrument, an anomaly report is generated for NASA's action.

Satellite on-orbit performance is continually evaluated for the entire design life duration. Based on the government's evaluation of the satellite performance, the contractor receives an on-orbit fee.

3. How does the satellite procurement strategy ensure the use of innovated technology?

An assessment of available technology and associated risks will be made as part of the government's initial concept studies. Additional government insight into technology availability will be achieved through multiple (two or three) formulation studies with industry. Results of both sets of studies will be evaluated prior to finalizing implementation requirements. Since government implementation requirements are stated in terms of performance, ultimately the contractors have final determination on use of innovated technology.

Occasionally, new technologies, at the component level, will be incorporated in an existing satellite series, e.g., solid state recording devices and an upgraded attitude control system are incorporated in NOAA N and N'.

4. How does the satellite procurement strategy ensure effective use of funding and reduce financial and program risk?

NOAA and NASA require the satellite and major instrument contractors to maintain a performance management system based on "Earned Value" concepts. NASA and NOAA hold monthly meetings at the spacecraft contractor site and quarterly meetings with instrument contractors to review their production and financial status. These meetings focus on reviewing information on work completed and comparisons to the planned schedule and cost. In addition, NASA, using a team consisting of personnel from other NASA centers, conducts an annual independent review of the program, which evaluates cost and schedule performance of the program as a whole.

5. How do we identify and implement lessons learned and minimize the risk of repeating past mistakes?

All test discrepancies and on-orbit anomalies are reviewed for possible impact to the performance of subsequent satellites manufactured in a given series. When problems occur NOAA and NASA utilize, Failure review boards, Tiger teams, and Anomaly review teams to sort out the root cause of failures or anomalies that occur during integration and testing or on-orbit. The results of these boards are taken into consideration and corrective action taken on all satellites still in the production line or, in the development of the next series of satellites. Many test discrepancies and on-orbit anomalies become liens against the launch of subsequent satellites. Also, there is a formal process within the performance assurance system which tracks anomalies on other programs. When anomalies are identified as generic on other programs then corrective action will be taken on the POLAR programs. All anomalies, must be resolved prior to launch and reported at the NASA Mission Readiness Review before a "GO" for launch is given by both NOAA and NASA.

B. Original baseline (OMB approved at project outset): Using the format of your selected PBMS, provide the following:

1. What are the cost and schedule goals for this segment or phase of this project?
[i.e., what are the project milestones or events, when will each occur; and what is the estimated cost to accomplish each one]

Original baseline: (FY 2000 PRESIDENT's BUDGET)	FY 00 & Prior	FY 01	FY 02	FY 03	FY 04	FY 05	FY 06	FY 07 & Beyond	Total
	1,463.2	98.2	73.7	61.2	78.6	xx.x	xx.x	xx.x	1,790.3
Current baseline:	1,339.4	136.7	139.3	122.3	116.0	74.8	61.2	95.2	2,085.0

All cost, schedule and performance revisions have been incorporated into the current baseline. Increase in total estimate of current baseline is partly due to the addition of recurring NOAA costs in FY 2007 which were not part of the out year costs in the previous submission.

See Attachment1 for the schedule.

2. What are the measurable performance benefits or goals for this segment or phase of this project?
[what are the measurable performance improvements or efficiencies that you expect to achieve with this project?]

See Attachment for performance goals.

C. Current baseline (applicable only if OMB approved the changes):

Using the format of your selected PBMS, provide the following:

1. What are the cost and schedule goals for this segment or phase of the project?

Original baseline: (FY 2000 PRESIDENT's BUDGET)	FY 00 & Prior	FY 01	FY 02	FY 03	FY 04	FY 05	FY 06	FY 07 & Beyond	Total
	1,463.2	98.2	73.7	61.2	78.6	xx.x	xx.x	xx.x	1,790.3
Current baseline:	1,339.4	136.7	139.3	122.3	116.0	74.8	61.2	95.2	2,085.0

All cost, schedule and performance revisions have been incorporated into the current baseline. Increase in total estimate of current baseline is partly due to the addition of recurring NOAA costs in FY 2007 which were not part of the out year costs in the previous submission.

See Attachment1 for the schedule.

2. What are the measurable performance benefits or goals for this segment or phase of this project?

Milestones for Current Baseline: The launch of NOAA-L in 2000, NOAA-M in 2002, NOAA-N in 2004 and the European Metop-1 satellite in 2005 are key events. Both require upgrades to data ingest and product generation and distribution systems. While NESDIS will not operate the Metop satellite, Metop will serve as the U.S. morning polar orbiting satellite and the ground system must be upgraded to acquire and forward its instrument data and incorporate it into the U.S. suite of products.

See Attachment 1 for performance table.

D. Actual Performance and Variance from OMB approved baseline:

1. Actual cost and schedule performance. Using the information from your PMBS, explain:
   a. What work you planned (scheduled) to accomplish and how much you budgeted to complete the work.
   b. What you actually accomplished and how much you actually spent.

Original baseline: (FY 2000 PRESIDENT'S BUDGET)	FY 00 & Prior	FY 01	FY 02	FY 03	FY 04	FY 05	FY 06	FY 07 & Beyond	Total
	1,463.2	98.2	73.7	61.2	78.6	xx.x	xx.x	xx.x	1,790.3
Current baseline:	1,339.4	136.7	139.3	122.3	116.0	74.8	61.2	95.2	2,085.0

All cost, schedule and performance revisions have been incorporated into the current baseline. Increase in total estimate of current baseline is partly due to the addition of recurring NOAA costs in FY 2007 which were not part of the out year costs in the previous submission.

See Attachment1 for the schedule.

2. Cost and schedule variance. If either the actual work accomplished or costs incurred vary from your baseline goals by 10 percent or more, explan:
   a. The variance between planned and actual costs or planned and actual schedule, expressed as a percentage of the baseline goal.
   b. The reason for the variance.

Cost: Variance due to the following factors: 1) increased need to replace and upgrade the ground system to keep it operational until at least 2012; 2) increased costs due to the Lockheed Martin move from New Jersey to California; 3) additional costs to replace aging high-maintenance spacecraft electronic test equipment; 4) funding to address and correct technical problems related to the physical and electronic interface of NOAA instruments on the Metop spacecraft; 5) procuring the NOAA-N launch vehicle on a 24-month versus 36-month schedule to avoid further slips in the launch availability of NOAA-N; and 6) delaying the NOAA-M launch date from August 2001 to March 2002, due to launch pad conflicts with DOD missions.

Schedule: The primary change was moving the NOAA-N and N' launch dates from December 2003 to June 2004 and from January 2008 to March 2008, respectively.

3. Performance variance. Explain whether, based on work accomplished to date, you still expect to achieve your performance goals. If not, explain the reasons for the variance.

Performance: No change.

E. Corrective actions:

If actual work accomplished or costs incurred to date vary from the planned baseline goals by 10 percent or more, explain:
   a. What you plan to do, if anything, to correct project performance.
   b. What effect your action will have on overall projects cost, schedule, and performance benefits

All corrective actions have been incorporated into the current baseline.

Attachment 1
Schedule Milestones

Milestones	FY Goal
Professional Support Services (PSS) Contract Award	FY01/FY 01
Operations Intranet Operational System Development	FY01/FY 01
PACS Development Rail Complete	FY01/FY 01
SOCC Expansion Complete	FY02/FY 01
NOAA-M launch	FY01/FY 02
Delivery of instruments to EUMETSAT for METOP spacecraft	FY01-FY02
SOCC move to NOAA Satellite Operations Facility starts	FY04/FY 03
Communications for MetOp data exchange	FY 04
Antenna upgrade at Fairbanks for MetOp	FY 04
Communications upgrade for METOP	FY04
Fairbanks and Wallops METOP Initial Operational Capability	FY 04
NOAA-N launch	FY 04
NPOESS Ground System development contract award	FY 04
METOP-1 launch	FY 05
NPOESS launch	FY 07
NOAA-N' launch	FY 08
SOCC - CDA 3C telemetry automation complete	FY 08
METOP-2 launch	FY 10

Performance measures:

	FY 00	FY 01	FY 02	FY 03	FY 04	FY 05	FY 06
# of NOAA satellites in operation	2	2	2	2	2	2	1
# of Metop satellites in orbit	-	-	-	-	-	-	1
# of NOAA/Metop satellite launches	1/0	1/0	0/1	0	1/0	0	0/1

	FY 00	FY 01	FY 02	FY 03	FY 04	FY 05	FY 06
# of NOAA satellites being maintained in non-operational orbit	4	4	4	4	4	4	4
Data recovery Rate (%)	98	98	98	98	98	98	98

Appendix C

NOAA Annual IT Security Program Review

National Oceanic and Atmospheric Administration

Annual IT Security Program Review
August 2001

The annual NOAA IT Security Program review utilized the methodologies found in the NIST Special Publication, "Self-Assessment Guide for Information Technology (IT) Systems," and the Federal CIO Council's, "Federal Information Technology Security Assessment Framework." NOAA used a sampling approach during the performance of this year's security program review. Self Assessment Guide Questionnaires were completed on approximately 33% of NOAA systems to provide a representative sampling of the implemented level of the NOAA-wide IT Security Program.

Based on the tools provided above, the NOAA-wide IT Security Program is assessed at a Level 3 that encompasses documented policies and procedures, and implemented procedures and controls.

Listed below is a summary of strengths and areas that need improvements for each of the 17 control areas of the Self-Assessment Guide for IT Systems:

Management Controls:

1. **Risk Management.** Risks are periodically assessed on all systems and program officials understand the risk to systems under their control and determine the acceptable level of risk. The development of countermeasure analyses and consequence assessments would improve the risk management process.

2. **Review of Security Controls.** System security controls have been reviewed and a process exists for reporting significant weaknesses and ensuring effective remedial actions. Tests and examinations of key controls routinely made (i.e., network scans, analyses of router and switch settings, penetration testing) would improve system security controls.

3. **Life Cycle.** Security actions are being performed during the various phases of the system life cycle. However, there is no formal DOC life cycle policy or methodology in place.

4. **Authorize Processing (Certification and Accreditation).** A formal process, based in NOAA policy, exists for the certification and accreditation of NOAA systems. Security plans, risk assessments, and contingency plans have been developed that support system certification and accreditation. Critical systems have been tested. However, an area of

improvement would be to ensure that contingency plans are periodically tested on an ongoing basis for all non-critical systems.

5. **System Security Plan.** System security plans have been developed for all NOAA systems and are kept up-to-date. NOAA security plans are developed using an automated software tool that complies with the prescribed topics in NIST Special Publication 800-18, "Guide for Developing Security Plans for IT Systems." Security plans are required to be reviewed on an annual basis and updated as necessary.

Operational Controls:

6. **Personnel Security.** Separation of duties, least privilege, and individual accountability are incorporated into security policies and system security plans. The DoC Office Of Security ensures that appropriate background screening for assigned positions is completed prior to granting access.

7. **Physical and Environmental Protection.** Adequate physical security controls have been implemented that are commensurate with the risks of physical damage or access. Data are protected from interception by controlling physical access to data transmission lines. The encryption of data files on laptops can be further controlled by incorporating the concept in the NOAA IT Security Awareness Tutorial.

8. **Production, Input/Output Controls.** Appropriate media controls are in place and are assessed during the security plan development, the performance of risk and vulnerability assessments, and system scans and penetration testing.

9. **Contingency Planning.** Contingency/disaster recovery plans have been developed but are not always kept up to date**.** System testing is performed but is not always fully documented.

10. **Hardware and System Software Maintenance.** Access to system software and hardware is limited. New and revised hardware and software are authorized, tested, and approved before implementation. Contingency plans are not always quickly updated to reflect system changes.

11. **Data Integrity.** Virus detection and elimination software is installed and activated. Data integrity and validation controls are used to provide assurance that the information has not been altered and the system functions as intended. An increased use of penetration testing would further ensure that appropriate data integrity controls are in place.

12. **Documentation.** Documentation is available that explains how software/hardware is to be used. Security and operational procedures are documented. Written agreements regarding how data is shared between interconnected systems is not available for all systems.

13. **Security Awareness, Training and Education.** The formalized NOAA IT Security Awareness, Training, and Education Program ensures that employees and contractors receive adequate training to fulfill their security responsibilities. Mandatory general employee awareness is provided for all NOAA employees and contractors. Specialized IT security training is provided for IT Security Officers, IT System Security Officers, network/system administrators, and other individuals with job functions that include security.

14. **Incident Response Capability.** NOAA has a formalized incident response capability. This includes a formalized process for incident reporting, incident monitoring and tracking, training of personnel in incident handling, and actions on alerts/advisories. Incident related information is shared with the DOC IT Security Office, the DOC OIG, and FedCIRC.

Technical Controls.

15. **Identification and Authentication.** System security controls are in place to ensure that users are individually authenticated. Access controls and access control profiles are in place that enforce segregation of duties. Data owners do periodically review access authorization listings to determine whether they are appropriate.

16. **Logical Access Controls.** Logical access controls are in place that restrict users to authorized transactions and functions**.** Controls for telecommunications access (e.g., disabling of insecure protocols, monitoring of dial-in access, firewalls and secure gateways, etc.) have been installed.

17. **Audit Trails.** Activity involving access to and modification of sensitive or critical files is logged and reviewed by system personnel**.** Separation of duties has been accomplished to ensure that security personnel who administer the access control functions are separate from those who administer the audit trails.

Appendix D

NOAA Implementation of the Government Information Security Reform Act

National Oceanic and Atmospheric Administration
Implementation of the Government Information Security Reform Act

Executive Summary

August 2001

A. General Overview

1. Identify the agency's total security funding as found in the agency's FY01 budget request, FY01 budget enacted, and the FY02 budget request. This should include a breakdown of security costs by each major operating unit and include critical infrastructure protection costs that apply to the protection of government operations and assets. Do not include funding for critical infrastructure protection pertaining to lead agency responsibilities such as outreach to industry and the public.

System Level IT Security Expenditures NOAA program managers are responsible for identifying IT security related expenditures in their annual budget submissions. System level IT security expenditures for FY01 were $13,241,000. For FY02, percentages were provided for the amount of overall system expenditures dedicated to IT security. The FY02 budget request included $14,551,000 for IT security expenditures.

NOAA management recognizes the importance of IT security and has taken steps to move towards a more proactive IT security program. However, this cannot be accomplished without additional resources (staff, budget, and technology). With the continuing increasing threat, the current IT Security staff levels are not sufficient to accomplish the IT Security Program mission. This is even with staff members that currently work overtime and compensatory time on a continuous basis.

In Spring 2000, a team was formed to develop the NOAA-wide IT Security Architecture. The team developed a draft NOAA IT Security Architecture document that included architecture objectives and principles in 10 domains, a target architecture, and a gap analysis. NOAA has recently developed the NOAA-wide IT Security Budget Initiative for FY 2003 that tracks back to the gap analysis developed by the team. The budget initiative requests funding to secure the NOAA enterprise-wide IT infrastructure. The budget initiative requests funding to implement the NOAA-wide IT Security Architecture in the following areas: Incident response operations, security services, security program management, security training, and security assessments. This initiative has been approved by the Department of Commerce and will be included in their FY 2003 budget submission to OMB.

2. Identify the total number of programs included in the program reviews or independent evaluations.

The NOAA-wide IT Security Program encompasses over 369 systems, each with a security plan.

3. Describe the methodology used in the program reviews and the methodology used in the independent evaluations.

The annual IT security program review utilized the methodologies found in the NIST Special Publication, "Self-Assessment Guide for Information Technology Systems," and the Federal CIO Council's, "Federal Information Technology Security Assessment Framework." NOAA used a sampling approach during the performance of this year's annual IT security program review. Self Assessment Guide Questionnaires were completed on approximately 33% of NOAA systems to provide a representative sampling of the implemented level of the NOAA-wide IT security program.

Based on the tools provided above, the NOAA-wide IT Security Program is assessed at a Level 3 that encompasses documented policies and procedures, and implemented procedures and controls.

4. Report any material weakness in policies, procedures, or practices as identified and required to be reported under existing law. (Section 3534(c)(1)-(2) of the Security Act).

The DOC Office of Inspector General (OIG) will provide the response to this question.

B. <u>Security Program Performance</u>

5. The specific measures of performance used by the agency to ensure that agency program officials have: 1) assessed the risk to operations and assets under their control; 2) determined the level of security appropriate to protect such operations and assets; 3) maintained an up-to-date security plan (that is practiced throughout the life cycle) for each system supporting the operations and assets under their control; and 4) tested and evaluated security controls and techniques. Include information on the actual performance for each of the four categories. (Section 3534(a)(2) of the Security Act).

a.) Risk assessments have been performed to assess the risk to operations and assets.

b.) Security plans, risk assessments, contingency plans**,** and user requirements are used to determine the level of security appropriate to protect operations and assets.

c.) Security plans for 369 NOAA systems have been updated during this reporting period.

d.) Security controls have been tested and evaluated through modularized and full system testing. Analyses of tests performed serve as a basis for determining the effectiveness of system level security controls.

NOAA IT Security Program policies require that risk assessments be performed on all major application and general support systems at least once every three years (or whenever there is a major change to the system). Further, all systems identified as critical assets under Presidential Decision Directive (PDD) 63 require vulnerability assessments once every three years. Throughout NOAA, risk and vulnerability assessments have been conducted and supported through varied methods and sources.

- ❏ The NOAA IT Security Office schedules and provides for independent vulnerability assessments typically by the National Security Agency (NSA) for major applications/general support systems.

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- ❏ Several NOAA Line Offices have augmented NSA provided vulnerability assessments with contractor provided risk assessments and penetration testing.

- ❏ The formalized NOAA Computer Incident Response Team (N-CIRT) performs vulnerability assessments and scans (as requested) for all NOAA Line Offices.

- ❏ A NOAA-wide capability exists for system owners to conduct low level risk assessments for cyber and physical resources through a software tool. This software is an IT Security Program management tool that is currently used to develop system inventories, system security plans, risk assessments, and contingency plans. This software serves as the model adopted for IT security program planning that provides for consistent and repeatable IT Security Program processes throughout NOAA.

- ❏ Surveys directed at assessing critical infrastructure (PDD-63) status of all DOC resources were completed in March 1999 and again in April-May 2000. The surveys can be acquired from the DOC, IT Security and Critical Infrastructure Protection Division Manager.

Numerous audits and evaluations have been conducted by the General Accounting Office and the DOC Office of Inspector General.

6. The specific measures of performance used by the agency to ensure that the agency CIO: 1) adequately maintains an agency-wide security program; 2) ensures the effective implementation of the program and evaluates the performance of major agency components; and 3) ensures the training of agency employees with significant security responsibilities. Include information on the actual performance for each of the three categories. (Section 3534(a)(3)-(5) of the Security Act).

NOAA-wide security program and implementation.

The mission of the NOAA IT Security Program is to provide direction designed to ensure that safeguards for the integrity, availability, and confidentiality of information technology (i.e., data, information, applications, and systems) are integrated into and support the missions of NOAA. An overview of the NOAA IT Security Program can be found at: https://csp.noaa.gov.

The NOAA CIO has responsibility for ensuring that all NOAA IT systems are assessed for implementation of adequate security controls. The NOAA CIO further delegates this responsibility to each Line Office CIO and system program manager.

NOAA IT Security policies require that Line Office CIO's ensure that security reviews of IT systems are scheduled and conducted at least every three years. Vulnerability assessments of PDD-63 critical asset systems are also required once every three years.

In 2001, the NOAA IT Security Office was elevated to a direct report to the NOAA CIO. The position for Director, IT Security Office was established and upgraded. In addition, two additional staff members were brought on board. The headquarters staff includes four full time federal employees and two contractor employees as represented below:

IT Security Program Management
2 FTE's (Federal employees)

N-CIRT Operations
2 FTE's (Federal employees)
2 FTE's (contract employees)

The NOAA Line Offices (7) have each appointed an IT Security Officer (ITSO) that has responsibility for the IT Security Program within their respective Line Offices. Some of the Line Offices have full-time dedicated ITSO's and some ITSO's have security as a collateral duty.

The response provided to Question #7 addresses the training of employees with significant security responsibilities

7. How the agency ensures that employees are sufficiently trained in their security responsibilities. Identify the total number of agency employees and briefly describe what types of security training was available during the reporting period, the number of agency employees that received each type of training, and the total costs of providing such training. (Section 3534(a)(3)(D), (a)(4), (b)(2)(C)(i)-(ii) of the Security Act).

Security awareness training is provided through new employee orientation, seminars, publications (including a quarterly security newsletter), the annual NOAA IT Security Conference, other NOAA-hosted technical expos, and NOAA IT security policies. A web based

IT security awareness tutorial has been procured ($20,500) for all NOAA employees and contractors. During this reporting period alone, 2,086 employees and contractors have received on-line training. The N-CIRT staff provided specialized hands on training workshops to 108 system/network administrators on "Efficient and Effective UNIX Security Measures." Specialized training for IT Security Officers, network, and system administrators has recently been procured ($100,000) through the SANS Institute. Training has recently begun for the 400 registered individuals.

8. The agency's documented procedures for reporting security incidents and sharing information regarding common vulnerabilities. Include a description of procedures for external reporting to law enforcement authorities and to the General Services Administration's FedCIRC. Include information on the actual performance and the number of incidents reported. (Section 3534(b)(2)(F)(i)-(iii) of the Security Act).

NOAA has established a formal incident response capability named the NOAA Computer Incident Response Team (N-CIRT). The N-CIRT operational duties include incident response, sharing of common vulnerabilities to the NOAA community, training on proper configurations for security, etc. The N-CIRT coordinates incident responses and is responsible for acting as a source of expertise and information regarding vulnerabilities and responses as pertains to the NOAA environment. The NOAA Incident Reporting Form 47-43 is an LDAP driven tool for the reporting of all incidents, e.g., intrusions and viruses. NOAA incidents are reported to the DOC IT Security Office, the DOC Office of Inspector General, and FedCIRC.

The following N-CIRT documents have been developed to provide guidance and assistance to NOAA Line Offices relative to incident handling:

- ❑ Computer Incident Response Guidelines SOP
- ❑ Fingertip Guide
- ❑ NOAA Emergency Action Card
- ❑ Security Dictionary for Common Vulnerabilities and Exposures
- ❑ NOAA Incident Report Form 47-43

In addition to the above documents, the N-CIRT has an internal web page that provides all this information for the NOAA Line Offices. The N-CIRT also forwards to all Line Offices security advisories, warnings, and alerts received from the: Federal Computer Incident Response Capability (FedCIRC), Computer Emergency Response Team (CERT) Coordination Center, Federal Bureau of Investigations, DOC IT Security Office, and various vendor security patches and advisory information.

9. How the agency integrates security into its capital planning and investment control process. Were security requirements and costs reported on every FY02 capital asset plan (as well as exhibit 53) submitted by the agency to OMB? If no, why not? (Sections 3533(a)(1)(A)-(B), (b)(3)(C)-(D), (b)(6) and 3534(a)(C) of the Security Act).

Security has been integrated into the NOAA capital planning and investment control process. Program managers are responsible for identifying IT security related expenditures in their annual budget submissions. For FY02, percentages were provided for the amount of overall system costs dedicated to IT security.

10. The specific methodology (e.g., Project Matrix review) used by the agency to identify, prioritize, and protect critical assets within its enterprise architecture, including links with key external systems. Describe how the methodology has been implemented. (Sections 3535(a)(1)(A)-(B), (b)(3)(C)-(D), (b)(6) and 3534(a)(C) of the Security Act).

Surveys directed at assessing critical infrastructure (PDD-63) status of all DOC resources were completed in March 1999 and again in April-May 2000. The surveys can be acquired from the DOC, IT Security and Critical Infrastructure Protection Division Manager.

11. The measures of performance used by the head of the agency to ensure that the agency's information security plan is practiced throughout the life cycle of each agency system. Include information on the actual performance. (Sections 3533(a)(1)(A)-(B), (b)(3)(C)-(D), (b)(6) and 3534 (a)(C) of the Security Act).

The DOC OIG will provide the response to this question.

12. How the agency has integrated its information and information technology security program with its critical infrastructure protection responsibilities, and other security programs (e.g., physical and operational). (Section 3534 (a)(1)(B) and (b)(1) of the Security Act).

NOAA has developed a Critical Infrastructure Plan (CIP) to protect NOAA's physical infrastructure and cyber-based systems. Surveys directed at assessing critical infrastructure (PDD-63) status of all DOC resources were completed in March 1999 and again in April-May 2000. The surveys can be acquired from the DOC, IT Security and Critical Infrastructure Protection Division Manager.

13. The specific methods (e.g., audits or inspections) used by the agency to ensure that contractor provided services (e.g., network or website operations) or services provided by another agency are adequately secure and meet the requirements of the Security Act, OMB policy and NIST guidance, national security policy, and agency policy. (Sections 3532(b)(2), 3533(b)(2), 3534(a)(1)(B) and (b)(1) of the Security Act).

Contractor provided services are required to meet the same IT security requirements as NOAA provided services. Contractor provided services are encompassed in the NOAA risk management process that includes the development of a security plan, performance of a risk assessment, development of a contingency plan, security awareness training and education,

certification and accreditation. Risk assessments and corrective actions occur through formal site reviews and independent technical evaluations. To further support these activities, NOAA has assembled suites of software for protecting systems (commercial anti-virus and risk assessment software, public domain Internet tools).